THE INTERRELATIONSHIP OF THE CREATIVE PROCESS AND CREATIVE PERSONALITY TO ACTIVITIES AND METHODOLOGY IN PHYSICAL EDUCATION

by

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This study explored the premise that the creative process can be developed and the creative personality of each student enhanced through physical education programs which are selected as to kind and conducted as to outcome. Gowin's system of philosophic inquiry was utilized, consisting of the development of hypotheses and their attendant sub-hypotheses based upon assumptions and presuppositions where applicable. Hypotheses were developed concerning the phenomenon of creativity, the process involved in creative enterprise, and the personality conducive to creativity. The teaching-learning environment was studied in terms of its contribution to the development of creative potential. The activities presented in a physical education program and a methodological scheme which advocated the presentation of those activities were studied.

Concepts which emerged as the product of tenable hypotheses suggested that creativity and creative enterprise could be fostered through physical education programs. The major factors involved in development of creativity appeared to be the teacher personality as it pertained to the structuring of the teaching-learning environment and the interrelationships of the teacher's personality and the chosen methodology.

In order to illustrate the interaction of Physical Education and creativity with their attendant facets, a model was constructed in the form of a mobile which suggested the attitudes of each component and the play of each component upon the other.

There seemed to be evidence to substantiate the concept that physical education programs selected as to kind and conducted with sensitivity could make a contribution to the development of creativity.

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CHAPTER I

INTRODUCTION

In recent years educators have become increasingly alert to the diverse abilities brought to the classroom by each individual student. The results of this awareness have been a proliferation of innovative curricula, teaching methods, and learning techniques, many of which are centered around relevance to the individual student. The teacher's adaptability in the individualization of instruction is of paramount importance with regard to most of these innovations.

The student has been given increased opportunity for planning activities, and greater freedom is being recommended in judging the success of assigned tasks. In some instances success has been interpreted as that which results from complete involvement in any problem-solving task (30, 73) and is judged both subjectively and objectively, according to the individual's apparent potential. It is assumed that the learner, in exercising imaginative freedom in solving problems and by becoming involved in solving the appropriate problem, is exhibiting a creative approach to learning. That is to say, there is no one right way to approach problems and find solutions. Students are more and more being encouraged to approach problems in their own ways--according to what works effectively for them. Teachers increasingly are willing to recognize that many means can successfully reach the same end, depending upon the abilities of the various individuals involved in the solution of a common problem (30, 73).

In terms of teaching aims, one of the fundamental purposes of all education is to adapt behavior through the development of the "fundamental processes" of reasoning, exploring, experimenting, decision-making, and evaluation. (14, 30) Behavioral adaptation or behaving in an "acceptable" manner in light of societal directives is contingent upon the concepts harbored by the individual learner and the way he puts those concepts together. Education aims at encouraging individual internalization of concepts. Ultimately education is interested in changing behavior which is unacceptable to the individual and/or the society in which he lives and positively reinforcing behavior which generally has societal endorsement.

Students who have been presented with common concepts and given a common problem to solve will attempt various solutions, success being that point at which teacher and student agree that the student has completed his task. At this point, there is usually behavioral change. An individual attempting to solve a problem in his own way, whether or not his way is identical with another person's, is demonstrating some degree of creativity. (41) The degree of creativity is commensurate with the process and involvement, but not all aspects of creativity are of the same value. Behavioral adaptation may have some creative aspects.

One of the focal points of Physical Education is behavioral adaptation. If behavioral adaptation accommodates creativity, it might be logical to assume that the discipline of Physical Education is uniquely endowed to sponsor creativity. However, a cursory, empirical analysis does not necessarily support such a grandiose theory. The obvious questions are: "why doesn't it?", and "could it?"

The concept of creativity is involved and nebulous as well as being complex. Creativity is a phenomenon which occurs in varying degrees and is justifiable for various reasons. Each individual's personality is said to possess some amount of creative ability, and there seem to be indications of the existence of truly total creative personalities. If education is meant to explore and develop student potentials, then it must consider, among others, the creative potential. If Physical Education is to continue its support of educational philosophy, then it, too, must consider its part in the development of the creative potential.

Delineation of the Problem.

The general assumption of this study was that Physical Education provides a fertile, though perhaps untilled, field for creative endeavor: specifically, for the development of the creative personality and the creative potential. The assumptions of the study necessitated an investigation of creativity as an abstraction as well as the process, the potential, and the personality attendant to the phenomenon. An intensive review of the scope of the literature which sought to study the relationship of the above factors was undertaken in the Spring of 1969. That review provided some clues to the nature of the study and some idea of the depth and breadth of the problem being undertaken. Even the most cursory review of materials revealed their vastness.

The pilot review of literature particularly pointed out the need for an in-depth review, utilizing both analysis and synthesis, of the available literature concerning creativity and its development. The

decision was made to deal only in philosophic generalities regarding the rationale for creativity. The cursory review of the literature in the pilot study also revealed the multiple ways in which the idea of creativity had been used in a variety of fields, including Education. For this reason, the author chose to consider creativity primarily from an educational point of view in hopes that some generalities concerning Physical Education and the development of creativity might evolve.

Physical Education, itself, was explored in light of its relationship to creativity, and thus an effort was made to ascertain whether creativity was fostered by the nature of the activities, by the nature(s) of the internal and/or external environments structured within the physical education experience, by the methods used to present the materials, and/or by the personalities of the teachers and the students involved in the teaching-learning situation.

It is hoped that this study will suggest connecting links among Physical Education, Education, and the development of the creative potential, and that those links will precipitate further study. It would appear, from the prevalence of literature currently available, that there are vast expanses of untapped creative potentials which educators are failing to develop. Perhaps this study will serve to assist in pointing out the need for attending more consciously to that development and will indicate directional sign posts to facilitate the development within the discipline of Physical Education.

Premise.

The premise of this study was: the creative process can be developed and the creative personality of each student enhanced through physical education programs which are selected as to kind and conducted as to outcome.

Statement of the Problem.

The study was designed to consider the logical implications of the interrelationships among the multiplicity of activities and methodologies in Physical Education and three aspects of creativity: the creative personality, the creative process, and the creative teaching-learning environment(s) conducive to the development of that personality and process.

Hypotheses and their attendant sub-hypotheses were formed concerning those interrelationships, and criteria for their tenability were deduced from analysis of the literature. The major hypothesis concerning creativity was that such a phenomenon does exist. Sub-hypotheses included propositions that creativity could be defined, that there existed a generally acceptable unitary definition of creativity, that creativity could be observed, and that creativity could be taught.

The second major hypothesis was that creativity and its products are manifested through a specific process called the creative process. Sub-hypotheses were formed concerning the nature of the structure of the creative process, the relationships of the parts of that structure, the place of the creative product in the process structure, and the assumption that the creative process might be taught as a separate entity leading toward an actual creative enterprise.

The third major hypothesis was that there is no readily available and all-inclusive profile of the creative personality. Antecedent sub-hypotheses which were developed from the major hypothesis concerned the creative potential, the identifiable characteristics of the creative personality and the interrelationships of such characteristics, and the relationship of creative personality characteristics to the structuring of an observable product which possessed recognizable creative characteristics.

The fourth major hypothesis was that the teaching-learning environment in which the creative individual works best is an internal one which he, himself, must structure and which cannot be deliberately inserted into the school setting. Sub-hypotheses were centered around the qualifications of a "teaching-learning environment," the environments specifically conducive to the development of creativity, and the establishment of environments in which creativity could be expected not to occur.

The fifth major hypothesis was that there are varieties of movement activities in the physical education curricula, some of which may lead to the development of creativity. Sub-hypotheses were developed concerning categorization of those various movement experiences, the concept of Physical Education as a separate discipline, the relationships between movement and the development of the creative potential, and the relationships between physical education movement experiences and the development of the creative potential.

Mosston's spectrum of teaching styles, which was assumed to be the most recent methods' theory dealing directly with creativity, was

explored in light of the previous hypotheses and their relationships to Physical Education.

The construction of a model to suggest the relationships of the concept of creativity with reference to Physical Education was necessary in order to make lucid the interaction of ideas. As a result of the analysis of the literature and the revealed philosophical logic inherent in the empirical method, conclusions were drawn and suggested directional emphases were indicated.

Method of Approach.

This study was approached utilizing Gowin's method of philosophical inquiry which is organized with regard to the structuring of knowledge. (130, 131) Key concepts and their attendant presuppositions and assumptions were developed concerning: (1) the nature of physical education activities and methodologies; (2) the nature of creativity; (3) the components of the creative personality and its development; and (4) the nature of the creative process and its development. In this manner a conceptual system, as symbolized by the model, was formulated.

Definitions.

For purposes of this study the definitions prepared by Dr. Bob Gowin (131) for philosophical inquiry were accepted.

An assumption is a "statement or proposition upon which other statements may depend. Something taken for granted, a supposition. Not tested, although it could be converted into a hypothesis for testing."

A presupposition is "an assumption made in advance, a necessary antecedent condition in logic or fact."

A concept is a "sign of invariance in a situation...., the root meaning of (which) is thought. Conceptual studies concern ordinary language and its uses..., and the logic of informal argument...."

A conceptual system is a "set of concepts logically related."

Each segment of the study or each sub-problem was developed as an hypothesis or telling question which "when asked seems to suggest other questions." In addition to the hypothesis, pertinent sub-hypotheses or connecting questions were developed and evidence supporting or refuting those sub-hypotheses was cited. Connecting questions are those which have to be answered in order for the telling question to be given an intelligible answer. (130, 131)

The literature was studied with the intent to pose identification of major ideas and concepts with regard to the major premise as the author interpreted the material. Materials were selected in terms of their treatment of the concept of creativity, rather than in terms of creativity within a specific field of endeavor (e.g., art). It became apparent, in the process of synthesizing and organizing the information thus gathered, that separate assumptions could be developed concerning types and levels of creativity. It was also apparent that the assumption could be made that creativity could be divided into the creative process, the creative personality, and the creative teaching-learning environment.

For the purpose of avoiding controversy regarding the merits of different systems of methodology and thus fostering an over-extension

of the intended study, generally accepted and recognized major physical education methods' texts were reviewed. The decision to assume Mosston's Teaching Physical Education as authoritative was made, with approval of the advisory committee, primarily because his treatise pertained more directly to creativity than others and also because it provided a contemporary treatment of physical education methodology.

As the literature was reviewed, analyzed, and synthesized, ideas concerning the interrelationships of the study took form. Every attempt was made to check the author's own ideas against those previously stated by presumed authorities with the understanding that, theoretically, there are probably no truly new ideas, only new understandings of pre-existent ideas and new patterns of relationships among materials and ideas. Empirically, it is necessary to make that assumption in order to maintain what has been described as a degree of cognitive openness. It is to be assumed that the answers and/or ideas herein presented are probably more representative of what might be developed as "educative creativity" than of what could emerge as "socially useful" or "integrated" or "emergentive" creativity. That is to say that this study will attempt to identify various types of creativity, to describe those various types, and to identify their interrelationships in terms of deduced similarities and dissimilarities.

CHAPTER II

CREATIVITY

Hypothesis.

Creativity exists as a separate and distinct phenomenon.

Sub-hypotheses.

1. Creativity can be defined.
2. Creativity is a process resulting in a product.
3. Creativity is observable.
4. There are various levels and forms of creativity.
5. Creativity can be described in terms of personality variables.
6. Education relates to and assists in the development of creativity.

Introduction.

Creativity has been described as discovery, invention, innovation, problem-solving, and originality. (32) No one synonym and no one definition has been agreed upon as one adequate description of the essence of creativity. Torrance (121, p. 3), in his discussion of human potentialities has suggested that the dilemma of definition with regard to abstract behaviors is complicated.

> Developing human potentialities is an infinitely complex process. It occurs in much the same way that genuinely creative behavior does. Since such development is infinite, we cannot identify its definition or its essence. We can only identify and describe some of its characteristics and the processes whereby one becomes human.

As the definition of human potentiality is nebulous, so it is with creativity; for creativity is really an aspect of the human potential. We are able to identify and describe some of its characteristics, we are able to identify and describe the process by which it occurs; but we are unable to agree upon a single definition of the term. (80, 122)

Generally, the phenomenon of individual creativity is a process resulting in a product which is said to be original, inventive, or imaginative according to personal and/or social criteria. (17, 78, 84, 41, 106, 134) Creativity is a universal: everyone is said to possess some degree of the ability to be creative. (13, 89, 107, 116) It is generally accepted that the personality of the individual involved in the creative process influences the success of the process application as well as the integrity of the resultant product. (49, 113, 62)

In spite of the difficulties inherent in accepting a unitary definition, there have been some efforts made to define creativity. Haefele, Griswold, Brauner, and Fabun have suggested definitions for creativity in a broad context. Haefele (39) defined creativity as being the ability to make new combinations via use of a dynamic process (dynamic in that the stages of the process may interweave and/or occur simultaneously). He suggested that high creativity is the phenomenon of making innovations of especially great social worth and involves "...(1) unusually skillful rapport with the unconscious, and (2) unusual symbolization of a nonverbal character." (39, pp. 16-17) Griswold (38) referred to creativity as being a phenomenon of the unconscious, occurring as inspiration in the form of a fully developed idea. He felt that, due to its initial strange appearance, the

creative action or product is generally not appreciated as great (to the society in which it is produced) until some time in the future. Brauner (12) supported Griswold's idea of strangeness of the creative product. He believed that, in addition to the product's unique qualities, creativity involves a willingness to take risks; and, in a conformist (i.e., comfortable and secure) society, creativity becomes a threat to the established status quo. The phenomenon of creativity, having become a threat and thereby having been confronted with threats in return, retreats because it is defenseless. As Brauner pointed out, creativity does not defend what it presents; the defense falls to the critics who find worth in the creative product.

> ...Creativity, then, is..."the process by which original patterns are formed and expressed".... We can never establish "newness" because our knowledge of history is so incomplete. We can establish originality because it relates to the personal transaction between the person and his environment. (32, p. 5)

Levels and Forms of Creativity.

"Creative acts occur in all levels of complexity and profundity." (13, p. 35) Numerous authors have attempted to categorize the levels and forms of creative endeavor in order to study them and thus to help develop an understanding of creativity and all of its ramifications.

Maslow (49) described primary, secondary, and integrated creativity, thus delineating degrees of creativity available to the individual and the society in which he lives. Primary creativeness "... can come only if a person's depths (i.e., his repressed inner-most urges which are not socially normative) are available to him, only if he is not afraid of his primary thought processes." (49, p. 135) Primary

creativeness is evaluated by the individual according to its worth to the individual. Primary creativeness is the raw material of an individual's creative potential. Secondary creativeness refers to those processes which lead to products subject to societal evaluation. Secondary creativeness results in the "great" work done to develop bridges, houses, automobiles and so on. The products of secondary creativeness are "... essentially the consolidation and development of other people's ideas." (49, p. 135) Integrated creativity results from a combination of both primary and secondary creativity. "It is from this kind that comes the great work of art, or philosophy, or science." (49, p. 135)

Taylor (67) pointed out that, although there are at least two-hundred-fifty recognized definitions of creativity, it can still be categorized. Where Maslow used three basic categories, Taylor used five. His levels of creativity are categorized from lower-level (which are process-oriented and may include many individuals of varying abilities) to higher-level (which are product-oriented and in which there are fewer individuals involved). Ranging from the process-oriented to the product-oriented, Taylor's five categories are:

1. Expressive creativity: characterized by spontaneity with no concern for a specific content.
2. Productive creativity: characterized by a quantitative criterion for products produced.
3. Inventive creativity: characterized by efficient and ingenious use of existent materials and ideas.
4. Innovative creativity: characterized by substantial modification

of existing principles as a result of a great deal of cognitive flexibility on the part of the creative individual.

5. Emergentive creativity: characterized by the emergence of an idea so radically new that a whole new science or art develops around it.

Maslow's and Taylor's systems of categorization would seem to encompass the scope of the creative enterprise, and a sequence in creative development might be hypothesized.

The base of the creative totem pole concerns the individual and the relative importance of the creative process to him. It consists of a lower level of cognitive activity and the nebulous but nonetheless exciting joy of insight. It might also involve the mental and/or physical manipulation of various materials. This primary creativeness is characterized by spontaneity and feeds upon the individual's natural curiosity, his yen to explore. It is his first inkling of his creative potential and, if dealt with sympathetically, establishes an attitude of openness to new experiences. That attitude of openness, of psychological freedom, is essential to the development of the creative potential.

As the creative potential is revealed, the process itself remains an intensely personal one, but the products affect others in the individual's environment; they are therefore subject to the criticism of others. This secondary creativeness is both productive and inventive; the practice of the process results in amassing a quantity of products as well as relying on the use of existent materials in the invention or discovery of new products. Perhaps the key to this

intermediate step is the development of an attitude of tolerance for alternatives.

The highest level of creativity is one in which the individual is open to his own ideas as well as to those of others. A balanced openness to all of the stimuli of his environment allows for an increased probability of creative insight. The highly creative person is extremely flexible and is capable of rigorous self-discipline in tackling the problem which presents itself for verification. The highest level of creativity is ideational and may result in far-reaching ideas, systems, and products which affect the lives of many.

The lower levels of creativity appear to be necessary to the development of the highest level, particularly from the standpoint of attitudinal development. Specifically, the attitudes which are assumed to be necessary to highly creative endeavors are those of cognitive openness and the ability to concentrate intensely on the verification of the problem presented. It seems quite apparent that the process of education could assume a great deal of the responsibility in the development of those attitudes.

Education and Creativity.

Both education and creativity are concerned with products and with the individual who produces. Neither education nor the creative process can fulfill its objectives without some kind of product in evidence. Although the products of creativity might have important uses in the society at large, their primary importance is to the individual who is a student in the educative process. In education, the educational product is the acquisition of various skills with emphasis on the

importance of those skills to the student. In creativity, the creative product is the emergence of an object which is tangible and meaningful to other people, in addition to the creator.

This difference in emphasis suggests the development of a concept relating creativity to education. Such a concept should concern the effect the educative process has on the development of creative skills. It should also be concerned with the evaluation techniques employed in determining the worth of the creative-educative product(s). The educative process should assume part of the responsibility for developing the individual's creative potentials. Guilford (93, p. 13) asserts that creativity is to be valued as the "...key to education in its fullest sense...." The most important aspect of creativity in an educational sense, then, lies in the quality of the individual's creative experience and in the meaning which that experience has for him. (78, 89, 41, 106, 113, 116, 68)

Summary.

At least nine major concepts have emerged in the understanding of creativity:

1. Creativity is a universal.
2. Creativity involves a dynamic process.
3. Creativity involves the emergence of a product which has meaning and significance for the producer.
4. Creativity involves a change which may be in terms of meaning, product, person, or society and which is essentially generated by a single individual.

5. No one definition of creativity is acceptable to all researchers; as a result, definitions frequently are clouded by descriptions of the personality of the producer and/or the criteria with which the product is evaluated.
6. The personality of the producer influences the way in which he uses the creative process and determines whether or not he uses the process effectively.
7. It seems apparent that some personalities are more "creative" than others and these personality variables influence the effectiveness of process application.
8. Creativity has educational as well as societal implications in terms of creative products, their usefulness, and for whom they are useful.
9. Evaluation of the creative product is inherent to that product's being labelled "creative." Evaluative criteria may be set by the individual creator or by the society in which he lives, thus altering the definition of creativity according to the intended purpose of the creative experience.

CHAPTER III

THE CREATIVE PROCESS

Hypothesis.

Creativity and its products are manifested through a specific procedure called the creative process.

Sub-hypotheses.

1. The existence of a creative process is empirically tenable.
2. The creative process is structured; i.e., it consists of identifiable steps or categories which may or may not overlap.
3. The creative process must terminate with the emergence of a product.

Introduction.

Creativity and its products are manifested through a specific procedure called the creative process. It is this process which results in the creative potential being recognized by the creator or by the audience for whom the product was created. Without creative products one could not assume the existence of the creative potential, nor could one guess that a specific process had been involved.

The knowledge of the existence of the creative process is empirically based. Such empiricism is a result of acknowledged persons of creative genius saying that such a process does exist. The procedure for verifying the existence of creativity is in its recognition. It is much like the procedure of identifying college success on the basis of

successful completion of college. It exists, and so it is; it is measurable, and so it exists.

There is, however, an emerging understanding of the process, that is, an understanding of the steps and levels of the process. The process may be a part of the act of discovery (i.e., uncovering something that is already known). In discovery, the creative process uncovers an entity which is new for the learner but not necessarily new to the universe. For example, the student in a physics laboratory may discover the law of gravity for himself, but that discovery does not alter the universe of physics since that universe and its understandings already include the law of gravity.

In its broadest sense, "the process is in reality what the person must do to produce the product." (81) It involves a yen to explore which is rather common to young children (81, 89) and which sometimes is said to be inhibited by formal education.

The creative process may be broken down into four general steps or categories. The process is not necessarily an invariant sequence; some of the steps may precede or overlap others. Haefele (39) described these categories (in order) as (1) preparation, (2) incubation, (3) insight, and (4) verification. These four steps are agreed upon generally throughout the literature, although they are enlarged upon, added to, and further explained or delineated by some authors. (9, 17, 82, 32, 36, 38, 93, 59, 110, 67, 119) The creative process is not unlike the scientific method in its preparation or identification of a problem, in the gathering and analysis of facts, in the formulation of hypotheses,

and in its validation procedure. However, it differs from science in that the same circumstances do not always result in product replication.

Preparation.

Bernard (9) spoke of the creative process in broad terms which, upon analysis, seems to indicate that he was speaking only of the preparatory stage. He emphasized that growth itself was a creative process for it involved continuous organization and reorganization. Bernard believed that the individual is confronted with a wealth of stimuli from his environment as he grows up, so he must choose those parts of the environment to which he will respond. In so choosing, he places himself in the surrounding existent situation, gathering experiences which will lead to future behavior. The individual thus prepares himself for what is coming while he is in the process of living each moment. All of his experience-gathering is akin to the preparatory stage of the creative process.

Griswold (38) referred to the preparatory stage when he stressed that creative work requires first a gathering of ideas. Gordon (36) substantiated this and further stipulated that the gathering of ideas is of a subconscious nature. Gordon, however, preferred to think of the creative process as something which occurs between the last two stages of what has already been described; the preparation leading up to the process is incidental to the process itself. According to Gordon, the process is that which occurs between insight and verification.

Crutchfield (82) described the preparation stage as including identification of the problem, putting the problem into workable terms, determining the relevant and irrelevant aspects of the problem, deciding what further information is needed, and possessing the knowledge and principles germane to the problem. Osborn (59) concurred but proposed that the nature of the research thus described should be, if at all possible, directly pertinent to the problem and built around it. Part of the preparation stage should be setting the hypotheses or piling up alternatives by way of ideas. This segment of the preparatory stage should proceed from an analysis of the available information. Fabun (32) also referred to preparation and manipulation of facts or of information around the problem area, but added the dimension of desire on the part of the problem-solver to engage in the problem-solving (creative) process. Pulford (110) further stipulated that the problem-solver, during the period of preparation, sets a goal(s). Such a goal might be the determination to see the problem through to conclusion or solution. However, whether the goal be in terms of intent, product or time, goal-setting is important to the creative process.

Guilford et al (94) have stressed the idea of information gathering which, according to most authorities, is mandatory to the initial stage of the creative process. Information is to be interpreted broadly to include all of the experiences of an individual's life. Each person uses all of the information he gathers but tends to favor one of four categories of information in his creative endeavors. The four categories of information, as outlined by Guilford, are: (1) figural information which is acquired visually by the artist and in an auditory

manner by the composer; (2) semantic information which is characteristically utilized by writers, scientists, and planners in their creative work; (3) symbolic information such as that which a mathematician or logician might use to create something; and (4) behavioral information used by people who influence and manage others. Guilford believed these kinds of information to be absorbed, refined, and used to communicate creative endeavor. Each category is a part of the educational pattern and is usually afforded formal attention.

The educational significance of the preparatory stage of the creative process has been pointed out by Burton (17). For educational purposes, preparation consists of achieving familiarity with the subject matter, securing experience in the use of facts, tools, and materials pertinent to the subject matter, and becoming absorbed in the creative task. It is imperative to note that, if creativity is an entirely personal matter, if all students are indeed individuals, if different people gather information pertinent and meaningful to them in different ways and use that information differently, then education can only hope for the acquisition of the first two of these preparatory components (i.e., achieving familiarity and securing experience). Absorption cannot be guaranteed or even assumed.

Psychologically speaking, the preparation stage can be referred to as the exposure stage (119). When the individual is exposed to a wealth of information, the value of that information will be determined in part by his willingness to accept it, which is often contingent upon whether or not it fits into his existent concepts. Exposure to information, as

it applies to the initial stage of the creative process, might be said to be dependent upon an "openmindedness" (62) which may in turn be implied to be a necessary cognitive style associated particularly with the preparatory stage. (81) Preparation for the creative process could be structured and arranged as well as spontaneous and unplanned. One never knows just what information will be of value in a creative way; the key seems to be to maintain an openness to experiences which may or may not be of use in the future. In the narrow sense, of course, when one is confronted with a problem one must be selectively open to that information which bears on the problem, keeping an eye on all aspects of the problem (pro and con) but at the same time eliminating extraneous stimuli. For example, a gymnast attempting to solve the problem of execution of the hip circle must be attentive to the apparatus, the position of her body and body parts relative to the equipment, and the execution of the skill. She must at the same time, however, be immune to spectators, to noises, to fear, and to other peripheral distractions.

Incubation.

Incubation, as preparation, seems to be an ongoing operation. It seems rather like the process of digestion in which many foodstuffs are taken in, some are used, and some are discarded. The digestive process takes longer for some persons than for others; hence, the final outcome of ingestation is sometimes quickly reached, sometimes slowly achieved, sometimes facilitated by the person's environment, and sometimes retarded by things outside the process itself. Creative incubation, in a sense, consists of the digestion of stimuli ingested during the

preparation stage. However, since incubation is an illusive stage, many authors do not recognize it as a stage in and of itself.

Osborn (59) described incubation as a "letting up" which allows illumination to take place. "Letting up" might also be termed quiescence (67), a time during which previously gathered information interacts at a subconscious level. It may be an incubation of ideas (110). Educationally speaking, it is the time during which the student makes a commitment to achieve his intended goals. (17)

During the incubation period, the creator might be driven by psychic tensions resulting from the destruction of a familiar S-R bond. When the proper response is discovered, that tension is relieved. (32) The creative individual's style at this point might be said to be one of divergence which may result in a forced convergence in order for that dissonance to be relieved. (81) Psychologically, such an attempt to relieve dissonance assumes that psychic homeostasis is a preferred behavioral pattern.

Toward the end of the period of incubation there may occur an intimation or premonition of impending closure; or there may be insight indicating that the individual has assimilated the new information into his cognitive system. (32)

Insight.

Insight has been variously defined as a synthesis of ideas (59), cognitive closure (67), inspiration, and fulfillment (17). It occurs in the twinkling of an eye with a clarity that may or may not last, giving the receiver what may be a false sense of security in having found the

"right" answer. (80) It cannot be accomplished by will power. During insight the will power is either dormant or engaged in unproductive activities. (38) It is during the period of insight that two principal elements occur without which the process could not be completed. One of these is the "generative" element--the appearance of the needed solution. The other is the "evaluative" element--the recognition of the needed solution. If the individual does not, for some reason, recognize the solution, verification becomes impossible and no creative product is formed. (80)

Griswold (38) had earlier thought that the creative process began with a sudden insight or idea which was then followed by intense work in and around the idea. In a very general sense, one could say that this is verifiable in certain cases. The key factor here would seem to be the question of whether the problem was presented prior to the insight or whether the insight itself defined a general problem area around which the process of solving that problem was built (specifically, preparation of pertinent information followed by a period of thoughtful incubation). It seems obvious, too, that the ideas herein produced would necessarily have to be uncommon and original in order to be considered creative. (82)

Insight must be refined if creativity is said to have occurred. The refinement is perhaps the most difficult part of the creative process, because it involves the most conscious effort and the greatest discipline. It occurs in the final step of the creative process which Haefele (39) calls "verification."

Verification.

Verification consists of testing the insight or the "hunch" to determine its validity and relevance. In the process of verification the creative act is first exposed as such, because at this stage some evidence of a product begins to appear. It is a critical period because the success of the process of verification will determine whether or not an original product will appear in the eyes of the creator or in the eyes of the creator's critics.

Verification includes evaluation, the reformulation of ideas, the transformation of the familiar into the strange or the strange into the familiar. It involves the execution of ideas as well as their revision, elaboration, and polishing. (17, 82, 32, 59, 110, 67)

During this period of refinement the idea must be checked for validity according to the criteria which it is meant to serve. Those criteria may be set by the individual or by the group which will be affected by the product. The idea must be refined in terms of its limits and its exceptions. Areas where the idea does not apply must be identified; and, finally, the idea (the product) must be stated in its clearest, most attractive form. (125)

Summary

The following concepts have emerged concerning the creative process.

1. The creative process consists of four steps which may or may not occur in sequence. Those four stages are: preparation, incubation, insight, and verification. (39)

2. Preparation, in its broadest sense, consists of all of those life experiences to which an individual is exposed and through which he learns something. In its narrowest sense, preparation refers to total immersion in a problem presented, a gathering of all information pertinent to that problem, and the elimination of extraneous information not pertaining to the problem.
3. Incubation refers to the assimilation of the information gathered during preparation; incubation may be accomplished consciously or subconsciously. It is the period during which the creator may appear to be frustrated because of his inability to recognize a new and satisfying response to a stimulus for which the old response is not longer adequate. Incubation may foster confusion in the mind of the creator.
4. Insight is the most difficult to define of the four stages since it involves what is assumed to be the chance occurrence of an idea which is new, unique, or original. It is a sudden understanding of the information gathered, as well as the establishment of a new order of that information. It might be said, for example, that any scientist is capable of applying the scientific method, but that only a few are truly creative. These few experience a sudden insight which results in a creative product. It is, thus, perhaps the period of insight which is the key to the creative process; although the insight does not occur unless the other phases of the process also occur, unless the insight is retained, and unless the insight is recognized to be of value when it occurs. Such understanding may have educational significance. The educational system can provide

all of the necessary materials and time for three of the four stages in the creative process. Insight is perhaps the most individual of all of the stages, making creativity an intensely personal matter. Education's contribution to insight might be in terms of understanding, time allotment, and patience. Education could structure the desirable environment for insight.

5. Verification might be said to be the most methodological of the stages since it involves the establishment of evaluative criteria, the formulation of hypotheses, the testing of the hypotheses, and the evaluation of the results of that testing. Verification is absolutely dependent upon the product which has resulted from preparation, incubation, and insight.

CHAPTER IV

THE CREATIVE PERSONALITY

Hypothesis.

There is no readily available, all-inclusive, completely acceptable profile of the creative personality.

Sub-hypotheses.

1. One of the human potentials is the ability to be creative.
2. The creative personality has identifiable characteristics.
3. Creative persons possess all of the characteristics of the creative personality.
4. The creative personality is influenced by the environment in which he lives, learns, and works.
5. A personality is identified as creative by the products it produces.
6. The key component in the creative personality is found in the structure of the belief system.
7. Different aspects of an individual's personality are manifested at different stages of his involvement in the creative process.
8. Relatively non-creative persons possess traits assigned as part of the creative personality.

Introduction.

As behavioral scientists are increasingly realizing the extent of the human potential, there is reason to believe that there is no

readily available, all-inclusive, completely acceptable profile of the creative personality. The human potentialities hypothesis (that man is using only a very small part of his capabilities) is still in a will o' the wisp stage. There are indications that potentials revealed in childhood are later lost in the process of acculturation, of "growing up." (107) That maturation process is, of course, expanded and added to through the systems of formal education. Such systems are outgrowths of the societies in which they exist.

It has been agreed generally that one of the human potentials is the ability to be creative. As with other abilities and potentials, the question of degree is determined by personality variables which are determined and/or acted upon by those innate characteristics with which one is born plus environmental influences with which the individual is confronted throughout his existence. It is accepted that the creative potential is universal; whether or not a person exhibits and/or develops his creative potential is determined by his attitudinal state of being. (8, 32, 107)

Characteristics.

The creative person is as interested in the process of creativity as he is in the product; pursuit is generally more important to him than acquisition. There are three general characteristics of the creative personality. He is first willing to explore; he is a "pack rat" of information, interested in accumulating a great quantity of facts and ideas; and he is an active seeker of information. The way he acquires his information (i.e., the pattern of his search and the way that

information is stored) may indicate his creative ability. Secondly, the creative personality consolidates his information, unifying isolated facts and ideas into a meaningful whole. The way he relates specific pieces of information is more important than how much he knows. It has been mentioned that the creative person must have a great quantity of information prior to the process of consolidation. The quantity he uses in the consolidation itself, however, is not important to determining the utility of his idea. A steady flow of stimuli tends to keep his mind open, increasing the probability of an emergent idea. Thirdly, the creative person is capable of applying that consolidated information in determining the relative value of the product in accomplishing the anticipated (or unanticipated) task. (100)

It would seem that the three variables mentioned are more characteristic of the application of the process than of the individual personalities involved. However, the ability to apply the process effectively is a ramification of the creative personality. The less creative individual might have full knowledge of the process but be unable to apply that process as effectively as the more creative person.

Isolated personality variables have been identified largely through the study of persons who are reputed, on the basis of the products they have made, to be creative. The creative person is intellectually courageous and possesses a great deal of curiosity. He is an independent thinker and exercises independent judgment. He is willing to take risks and is intuitive. He has the ability to become completely absorbed in his work and is persistent in seeing it through. He likes to experiment, to evaluate, to prove things; and he is visionary

in his approach to the task. Torrance (120) said that, although there may be other variables in the creative personality, the above characteristics are paramount in the creative individual.

The creative person is also said to be confident, introspective, openminded, respectful (of others), a decision maker, playful, and lazy (in appearance). He has wild ideas, produces products off the beaten track, procrastinates, works in a variety of ways (sometimes using a part-whole approach, sometimes a whole-part approach[1]), and has a primary urge to accomplish something. He also values his own work highly, can withstand group pressures to conform, is capable of delaying his criticism of new ideas, has a high tolerance for internal dissonance and ambiguity, is capable of convergent and divergent thinking as the task demands, is a loner (preferring things and ideas to people); yet he is dominant. (39) He possesses a conventional morality, places less emphasis on personal security, dislikes routine, is precise and honest, and possesses intellectual integrity. He values the theoretical; he has inner maturity, yet is emotionally responsive sometimes to the point of being excitable, irritable, unstable, and anxious. He is spontaneous, stubborn, impulsive, compulsive, and complex. (39) (See Table I, p. 33)

Personality and Environment.

The individual's personality is influenced by the factors of age, sex, education, effort, and family life. His ability to be creative

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[1]With some creators the stroke of creativity comes in a part-whole fashion, i.e., they think of a part and build the whole around it. With others the creative impulse occurs in a whole-part fashion, and they must struggle with the parts in order to make the whole meaningful in the way in which they intend it to be.

TABLE I

PERSONALITY TRAITS OF CREATIVE INDIVIDUALS
SELECTED BY AUTHOR

TRAIT	Berelson & Steiner 1964	Brimm 1966	Brown 1968	Eisenman 1968	Fabun 1968	Griswold 1939	Haefele 1962	Osborn 1963	Torrance 1963	Torrance 1965	Torrance 1970	White 1968	Woods 1962
Courage					X		X			X			X
Curiosity					X		X			X			X
Independent thinking	X	X		X			X			X			
Independent judgment	X	X		X			X			X			
Takes risks							X			X			
Intuitiveness			X							X			
Absorption						X				X			
Persistence		X			X		X	X		X			X
Prover, experimenter			X							X			X
Visionary										X			X
Confidence		X											X
Introspect							X						X
Openminded	X			X	X	X	X						X
Respects others													X
Decision-maker													X
Playful									X				
Appears lazy									X				
Wild ideas	X						X		X				
Off beaten track									X				
Procrastinator									X				
Task approach						X							
Part-whole, whole-part						X							
Primary urge						X							
Values own work		X			X								
Withstands pressure		X											
Delays criticism		X											
Tolerates dissonance		X			X		X						
Tolerates ambiguity		X			X		X						
Convergent-divergent		X	X		X		X					X	
Master thinking skill		X											
Loner, prefers ideas					X		X					NO	
Dominant							X						
Conventional morality							X						
De-emphasizes security							X						
Dislikes routine							X						
Precise							X						
Honesty, integrity							X						
Theoretical values							X						
Inner maturity							X						
Emotionally responsive							X					NO	
Spontaneous, impulsive							X						
Stubborn							X						
Compulsive							X						
Complex							X						
Liberal education					X								
Less self-acceptance							X						
Not time bound					X								
Humaneness											X		

may be more a matter of his mental energy output (his mental hyperactivity) than of his inborn talent, and the factors of his life style may influence that output. As a person grows older his innate creative talent does not diminish, but the motivation or the drive to develop that talent may decrease. Generally speaking, the female seems to be more innately creative than the male, but the greater number of noteworthy and useful creative products have been produced by males (probably because of the roles which have been societally induced in males and females). (59, p. 19) Indeed, the sexual identification of the creative individual may have its genesis in cultural experiences rather than genetic disposition. The person's educational experiences may serve to develop or retard the creative potential or personality depending on the teaching methodology employed and the environment produced by the educational process. The effort (i.e., the drive or motivation) factor determines whether or not the potential to be creative is brought to fruition in a recognizable product. (59) It would appear that the child who is brought up in a permissive family environment and who is exposed to a liberal education will probably have the opportunity to develop his creative potential (32); but if the individual is capable of a great deal of effort and the motivation to create is strong enough, even a child from an authoritarian background, reared under a rigid educational process, can produce creatively.

The child's creative endeavors may be hampered or cramped by numerous factors. Learning by traditional methods tends to inhibit creativity. Often the individual in an authoritarian school environment becomes stuck in the preparatory stage (information gathering) of the

creative process. In so doing he loses sight of his imaginative powers which allow his access to the next steps of the creative process. He acquires habits of problem solving and tends to carry them over from problem to problem, rather than looking for new approaches, new meanings, new ideas. (59) "The development of creative potential is now generally regarded as an educational goal, important both to the individual and to society." (91, p. 111) The creative potential needs educational nourishment.

Society tends to encourage conformity (openly or subtly). The individual, in order to be accepted in his society, tends to de-emphasize originality and imagination in himself so that he will be well-liked and accepted. (8) In order to preserve the status quo, society often tends to inhibit or stifle a certain amount of originality, thus stifling the cultivation of ideation which is central to the development of the creative personality. (32, 59)

The family which encourages openness of expression, accepts occasional regression on the part of the child, and accepts individual divergence and risk-taking is quite likely to encourage the development of the child's creative capacities. The parents in such a family are usually more permissive and mother-dominated, providing a stimulating atmosphere for the child. (91, p. 113) The creative student in such a family is less insistent on establishing complete independence from his parents, because he is not threatened but is secure in his parent-child relationship. The child in an authoritarian home, where ambiguity is fostered by divided parental authority, is less likely to exhibit creative tendencies. (91)

The "typical" creative personality profile appears to be a conglomeration of traits describing everyone and no one. The creative product is the most definable expression of the creative personality. Creative products range from those indicating a high degree of creativity to those indicating a low degree, the degree being judged according to the intended use of the product and by whom it is to be used. One is unable to place a value on the products (i.e., whether they are good or bad) because value is determined in at least two broad dimensions (meaning to the individual and meaning to society), and because values tend to change.

There are, however, perhaps two criteria which can be useful in an all-inclusive description of the creative personality: (1) whether that personality is a function of a closed or an open system; and (2) whether the "master thinking skill" is present.

The Belief System.--Perhaps the key component in the creative personality is "cognitive openness" as indicated by the belief system. The open and closed systems may be described succinctly in outline form as shown below. (62, pp. 55-56)

Open	Closed
1. Low rejection of disbelief.	1. High rejection of disbelief.
2. Little discrepancy between belief and disbelief systems.	2. Great discrepancy between belief and disbelief systems.
3. High differentiation within disbelief systems	3. Little differentiation within disbelief systems.
4. Perceives world as friendly.	4. Perceives world as threatening.
5. Perceives authority as not absolute; evaluation an individual process.	5. Perceives authority as absolute; individual evaluated according to degree of agreement with authority.

6. Beliefs and disbeliefs in communication with each other.	6. Beliefs and disbeliefs isolated from each other.
7. Broad time perspective.	7. Lack of future-oriented time perspective.
8. Ability to synthesize.	8. Ability to analyze.

The more open the individual's belief system, the less reliance there is on external reinforcement; the less anxiety exists (or the more the person is capable of accepting anxiety); the more ambivalent the child is toward his parents; the more he expresses his ambivalence when it does occur (thus relieving cognitive pressure); and the less authoritarian the person is. (62) The status of the open and/or closed mind is "influenced by situational conditions interacting with personality." (62, p. 402)

Openmindedness does not necessarily imply a person-oriented (versus a task-oriented) person. The openminded individual may be either, but he places a low relative value on interpersonal activity. He prefers to be asocial, but he is capable of high levels of interpersonal reaction when the situation demands it. "Being disinterested in social interaction is not the equivalent of being incapable of it." (98, p. 252)

The creative person may manifest different aspects of his personality at different stages in the creative process. He may utilize aspects of both open and closed systems of belief. For example: while he is in the process of gathering information (preparation) he may be highly social and open. When an idea strikes him as being worthy of pursuit, he becomes intensely motivated and thus operates on a

closed personality system. This motivation may be of a practical nature (food, family, fame). It may also be of a nature indicating the individual's need for satisfaction (in creating, achievement, and service). It may be in anticipation of the joy of insight. It may be a search for freedom (from frustration); or it may just be a challenge. At any rate, the individual, after having been struck with the idea experiences a great deal of frustration during the incubation stage. He is desirous of cognitive closure (because there is security in closure) and is confronted only with dissonance. During the insight stage he is characteristically anxious; anxious to try out his idea, to put it to the test, to establish its worthiness. If, during verification, the idea is proven to be fruitful, then the individual is relieved of his anxiety and frustration and is able once again to be more open in his social contacts. (39)

The Master-Thinking Skill.--The second criterion is a nebulous factor, basically responsible for the development of the creative personality. Brim (13, p. 38) refers to this as the "master thinking skill" or the "basic ability to plan, organize, and deploy a basic repertory of specific skills in optimal attack on a creative problem." The "master thinking skill" is, even by definition, illusive. The factor is one which accounts for the fact that all creative persons do not possess all of the characteristics of the creative personality. It is the factor which accounts for the fact that the person who does possess all of those characteristics is not necessarily creative. It is the factor which accounts for the fact that those persons whom one could least expect to be creative can still be capable of creative work.

The creative person may not be different from anyone else. But in not being different from everyone else, he is different from everyone else; for we are all vastly different from each other in terms of potentials, personalities, effective environmental stimuli, and aspirations. The tenet of individual differences is paramount in behavioral understanding.

Perhaps the difference between the creative and the non-creative (rather, the less creative, since we have assumed that creativity is a universality) lies in the creative product. If creativity is viewed in its societal sense, then the creative person is one who produces what is conceded by the majority of people to be new, unique, innovative, original; in short, it is creative. The product is often useful and meaningful to the general public. If creativity is viewed in an educational sense, then the value of the creative product may be determined either by the individual creator or by his "society," i.e., the group(s) with which he most often interacts.

The preceding discussion of the creative product points to yet another criterion which is perhaps useful in determining creativity. That criterion concerns the critics who judge the "creativeness" of an endeavor. Brauner and Burns (12) stipulated that creativity does not defend what it presents; the defense falls to the critics who find worth in the creative product. If creativity is viewed, then, as something which results in a product having use for a society, the feelings of the creator are discounted. If, however, creativity is viewed as having educational possibilities, part (if not all) of the

evaluation of the product could come from the individual who has constructed the product. The student can, in fact, with conscience become his own best critic.

Summary.

Two important generalities seem to have emerged throughout the literature regarding the creative personality.

1. There are no personality characteristics unique to the creative individual, except and unless one considers the plausibility of the existence of the "master thinking skill" and/or the relative degree of cognitive openness within the individual's belief system.
2. The worth and meaning of the creative product is a function of the way that product is perceived by the society for which it has been structured rather than being a function of the creator's personality.
3. In an educational sense, greater importance is attached to the meaning which the creative product imparts to the critical individual than to the meaning which that product may have for that individual's "society."

CHAPTER V

THE TEACHING-LEARNING ENVIRONMENT

Hypothesis.

The environment in which a child lives and learns has a substantial effect on how, as well as what, he learns.

Sub-hypotheses.

1. There are teaching-learning environments which can be identified as being conducive to the development of creativity.
2. There are some environments more conducive than others to the development of creativity.
3. In the teaching-learning situation, the teacher is responsible for the adequacy of the internal environment and the control of the external environment.
4. Certain obstacles to creativity may or may not be present in the teaching-learning environment.

Introduction.

"There is a special climate in which the creative process flourishes. It is not the monopoly of the art or music classroom, but can be found wherever there is a teacher who constantly seeks to find new and exciting ways to enrich the learning experiences of students." (116, p. 38)

Children learn what they live.....
If a child lives with criticism,
He learns to condemn.

If a child lives with hostility,
He learns to fight.
If a child lives with ridicule,
He learns to be shy.
If a child lives with shame,
He learns to feel guilty.
If a child lives with tolerance,
He learns to be patient.
If a child lives with encouragement,
He learns confidence.
If a child lives with praise,
He learns to appreciate.
If a child lives with fairness,
He learns justice.
If a child lives with security,
He learns to have faith.
If a child lives with approval,
He learns to like himself.
If a child lives with acceptance and friendship,
He learns to find love in the world.

- Dorothy Law Nolte

The environment in which a child lives and learns has great effect on how, as well as what, he learns. There is a continuous give and take between the internal environment of the individual personality and the external environment of the world in which he lives. Neither environment is simple to understand, and full meaning and significance of both has yet to be reached. The best possible control of these environs seems to lie in making series of educated guesses with regard to what specific environmental factors can be manipulated to produce specific behaviors and, thus, a specific sort of individual.

The question of whether creativity can be taught seems to be directly connected with the structuring of the teaching-learning environment. The climate which best provides for the development of the creative potential seems to be one in which indirect teaching in the form of eliciting responses takes precedent over direct teaching in the

form of command performance. Hallman (96) said that creativity can be taught; but it cannot be incorporated into lesson plans nor can it be taught in the traditional, authoritarian manner. He seemed to attach great importance to the phenomenon which is commonly called the "teachable moment"; i.e., the moment at which the student's curiosity provides the motivation and the necessary openness to learn. Steinmetz (118) asserted that creativity cannot be taught directly, but that rather, the student must be given opportunity to feel his creative powers. The implication is that the teacher must elicit that response as well as allow it. In addition, there is a need to develop further creative powers through exercising them in the learning environment.

It is assumed that the greatest single determinant in whether creativity can or cannot be taught is the teacher and his relationship to the structuring of the environment (i.e., how much responsibility the teacher is willing for the student to have in the teaching-learning process). The learning environment which is conducive to the development of creativity centers around the teacher-student dyad. The importance of that dyad and the relative value of its participants is established by the teacher. (84)

The Teacher.

Usually, the teacher who designs an environment conducive to creative elicitation is himself representative of the creative personality. He is curious, a divergent thinker, and a listener to "wild" ideas. He is sensitive and responsive to people, ideas, and events. He is sure of his purpose and of the students' purpose, so he

does not dominate the class. He is tolerant of clumsy efforts, of testing and re-evaluation, of inaccuracy, ambiguity, uncertainty, and slow decision-making; he takes risks when indicated. He knows the meaning of the "safety-challenge," giving the child security while he tries the unknown. He respects all personalities, ideas, questions, and products. He encourages student efforts, experimentation, and investigation, rather than repressing and discouraging those efforts. He permits and encourages diversity, avoiding uniformity and rigidity in his daily student encounters. He helps the child continuously evaluate himself. He keeps abreast of the latest literature in the field of creativity. He eliminates the "strait jackets" of creativity, including: rigid, uniform curricula; typical marking systems; schemes for pupil progress; rigid grouping with an attendant neglect for individual attention; the fixed time period; administrative routines and systems; control versus flexibility. He consciously attempts to improve the teaching and learning processes and seeks to develop personalities, using group processes when practical. (17) The creative teacher has to invent his creative techniques from day-to-day. (84) "It remains to be investigated whether the principles of creative teaching are identical with the principles of all <u>good</u> teaching," (96, p. 327; 17) but the preceding lists of attributes serve to point out the multiplicity of variables which have been observed within classes in which creativity has been evidenced. Obviously, the acquisition of knowledge does not insist upon creativity. Thus, it is obvious that all teaching does not foster creativity. The value of that premise is still to be ascertained.

Certain obstacles to creativity may or may not be present in the teaching-learning environment. These can be personified by the unfeeling, inapt teacher. Frequently a pressure to conform is developed as a result of a teacher-centered learning process and an inflexible curriculum. The teacher sometimes assumes an authoritarian attitude. The teacher sometimes ridicules the student. The teacher sometimes exhibits a rigidity of personality and overemphasizes rewards. There are teachers who have an excessive desire for certainty, who demand right answers and responses as they have been predetermined. Such teachers overemphasize product-oriented success, focusing on the specific outcome rather than the process. They are sometimes hostile toward divergent personalities and are intolerant of the "play attitude." (96) It would seem that such teachers deter, rather than enhance, the emergence of creativity.

The Environment

Corresponding to the teacher's own characteristics, certain environmental conditions lend themselves to the development of the creative potential. It must be understood that there are two continuously interacting environments involved in the teacher-learning process. The most obvious is the physical environment, comprised of facilities and equipment; the other is the emotional and/or psychological environment, structured as a result of student-teacher-subject matter interrelationships.

The school must be a children's community in the sense that there are few, if any, adult standards of performance imposed on the students. (17) The curriculum, as well as the course content, should be arranged

so as to provide a variety of appropriate experiences for the child to encounter. (17, 81, 116) The greater the variety of experiences, the more likely it is that creativity will occur. (17, 84, 41, 96, 107, 116, 120, 73)

Schedules should allow time for exploration, curiosity, discovery, and experimentation, as well as time for the student to demonstrate the products of his creative endeavors. (17, 84, 41, 96, 107, 116, 120, 73)

The teacher is responsible for providing the student with the tools of the trade (the acquisition of necessary skills) relevant to the student's goals; and it is the responsibility of the teacher to plan goals which are clear to the learner and coincident with the student's own goals. (74, 79, 81, 84, 96, 116, 73) Goal-planning is facilitated by cooperative student-teacher planning on a day-to-day basis. Cooperative planning tends to enhance creative development in that it minimizes the authoritarian atmosphere that tends to prevail in traditional school settings. (79, 17, 41, 96)

Every attempt should be made by the teacher to meet the student at the point at which he is, diagnosing needs as accurately and fairly as possible and building the student's program from that point. Individualized instruction is beneficial to the development of the creative potential; however, the natural groupings in a class can provide encouragement for the development of the creative potential, and the teacher should use such groupings in order to achieve that end. (17, 41, 114, 116, 120)

Self-initiated learning and thinking on the part of the student can be encouraged in an atmosphere of controlled freedom, intellectual

risk, and spontaneity. (74, 12, 17, 81, 84, 41, 96, 116, 120) Competition can be used effectively in motivating the student toward achievement if the student places a premium on being the winner. (41, 120) The student should be encouraged to over-learn in order that the material in the preparatory stage of the creative process can be pushed into the sub-conscious and made ready for the incubation period. (96)

In structuring the emotional environment, the teacher should attempt to challenge the student (114); and he should deliberately use methods of creative problem-solving and guided discovery, organizing "think" problems, thought-provoking questions, and "laboratory" problems, while developing skill at knowing when, where, and what to hint to the student to make the creative process meaningful to the student. (79, 17, 80, 81, 96, 120, 73) The teacher should, in this respect, go beyond exposing the student to the creative products of others; and get the student, himself, involved in the process of creativity. (81)

Students and teachers alike should develop attitudes of tolerance, of experimentation (with ideas and materials), of positiveness (believing that problems can be solved and techniques can be learned), of sensitivity, and of all-out effort (a desire to win, coupled with an understanding that mistakes, too, are bound to be made) in the school environment. (74, 17, 81, 41, 96, 114, 116, 120, 73) The student should be helped to cope with frustration and failure (96), for this can be indicative of progress toward creative thinking success. (118) In learning to understand himself, the student should become more and more self-directed. (74, 41)

Finally, the evaluation procedure from teacher to student should not be a value judgment in the sense that something is said to be right or wrong, good or bad. This kind of value judgment tends to adversely structure the emotional climate which is necessary to stimulate cognitive openness. Rather, evaluation should be in terms of originality, intuitiveness, and recognition of original creative behavior as opposed to deviant behavior. (116, 120) Evaluation procedures should be both student-centered and teacher-centered, judgment being deferred until the appropriate time and being accompanied by the appropriate rewards. (96, 120, 73)

Summary

In terms of modern methodology, it can be said that creative teaching amounts to going beyond the product to the process (81) and to the point of nurturing "humaneness." (121, 19) Going beyond the product to the process involves a student's being involved in the doing as well as the knowing. Instead of continuously being confronted in his classes with the results of someone else's creative work, the student is allowed to prepare his own materials, make his own inferences, and arrive at his own creative product(s). Nurturing humaneness on the part of the teacher involves getting to know oneself, getting to know one's students, helping the students to know themselves, and helping the students to know each other. The understanding that can be developed in this kind of approach can lead to creative endeavors. Continuous evaluation and re-evaluation can make such a program work. Continuous evaluation is necessary, because each class brings with it a whole new

set of individuals, a whole new set of problems, and perhaps a whole new creative approach to teaching and the structuring of the teaching-learning environment.

"Every aspect of the curriculum is replete with opportunity" for the development of the creative potential. (17, p. 8) It becomes the central task of the teacher, then, to make conditions possible that creative opportunity may present itself.

Following are some generalities which are apparent in the literature regarding the creative educational environment.

1. There are two environments with which the educator should be concerned: the physical and the emotional-mental-psychological.
2. Providing the minimum standards of the physical environment are met, the emotional climate in which teaching and learning go on is of paramount importance to the effectiveness of the teaching and learning.
3. It is the responsibility of the teacher to structure the emotional climate of the class, being ever cognizant of the student's nature, needs, and desires.

CHAPTER VI

PHYSICAL EDUCATION ACTIVITIES

Hypothesis.

There are varieties of movement activities in the physical education curricula, some of which may lead to the development of creativity.

Sub-hypotheses.

1. The structure of a curriculum is many-faceted.
2. The content of Physical Education can be categorized.
3. There is a relationship between Physical Education and the development of creative potential.
4. Physical Education can be interpreted as human activity, play, games, knowledges, concepts, purposes, and processes involving all of the behavioral domains of the whole individual.

Introduction.

The purpose of American education is to contribute to the development of the child's optimum potentials and capacities through understanding of his heritage and acquiring the skills of adaptation. The term "total child" is often used in the discussion of purpose of education. Since the individual is an interaction of mental, physical, and social capacities, it seems logical to assume that, if education proposes to serve the "total child," education must include a program

for physical development as well as programs for intellectual and social development. Physical Education is the specialized field designed to contribute directly to the child's physical understandings. It is, like Education, committed to the development of the total child, but it is unique in that it utilizes the physical modality more than other disciplines within Education. Physical Education attempts to support the conceptual directives of "learning to move and moving to learn."

The Physical Education Curriculum.

Mackenzie (48) has said that the educational curriculum consists of "the pedagogical strategies and procedures used by teachers to inspire students to learn." The physical education curriculum consists of all of the instructional programs involved in implementing a physical education program within a school. Those programs are structured to be consistent with the philosophies of the school system, the individual school, and the specific department within which the program is operative. The curriculum includes the experiences of the teacher-learner relationships, planned and unplanned, which occur at any time within and contribute to the structure of the physical education program. These experiences generally revolve around and evolve from various sports, games, and related movement activities. (21, 40, 45, 46, 48, 57, 72)

Classification of Physical Education Activities.

One might logically ask the question as to whether the content of Physical Education can be clearly categorized.

In order to provide accurate, yet concise, coverage of the kinds of activities used to teach physical education concepts, the activity

matrix can be structured into six areas: basic motor activities, rhythmic activities, individual, dual, and team activities, and knowledges and conceptual understandings of movement. (16, 20, 25, 43) Aquatics, tumbling, dance, and combatives are frequently listed as separate activity categories; however, it is possible for these to be subsumed in the activities' list as presented. (5, 28, 66, 71)

Basic motor activities are those aspects of the physical education program which stress movements basic to all other activities. Examples are walking, running, pushing, pulling, throwing, and catching, as well as understandings of space, time, force, and shape.

Rhythmic activities are those which provide opportunities for the students to move within specified rhythmic patterns. These patterns may be specified with the drum, tambourines, the triangle, clapping, voice, and numerous other instruments for establishing rhythm. The familiar approach entails the use of music.

Individual activities are those in which the individual can participate in and complete a game by himself but does not have to participate singularly. Examples of individual activities are golf, bowling, archery, and track and field events.

Dual activities are those in which the player must have at least one opponent. Dual activities may also include a partner and a corresponding set of two opponents. Examples of dual activities are badminton, tennis, fencing, and wrestling.

Team activities are those which require more than two members on each of at least two opposing groups. Generally, team games require a division of labor in which each team member fulfills a particular role.

The combination of roles and the people in those roles contribute to a singular team effort toward a specified goal, usually against a group of opposing players. Team games include such activities as field hockey, basketball, baseball, football, lacrosse, and soccer.

Knowledges and conceptual understandings of movement permeate the hitherto defined range of physical activities. These knowledges and concepts are an integral part of the entire gamut of the program. They may be recognized as concomitant learnings, but they may also be taught as a separate entity in and of themselves. Such knowledges and concepts may include generalizations such as: muscles work in opposing pairs, movement is necessary for the healthy maintenance of the muscular system, movement is macroscopically common to living organisms, movement is a means of expression and/or communication, the quality of movement depends upon neuro-muscular integrations, movement reflects the affective domain of human behavior, social norms are a part of games, movement patterns are related to social stratification.

Creativity in Physical Education.

Assumptions have been made in the recent past concerning the relationship of physical education activities to the development of the creative potential. (116, 120) The natural inclination has been to assume the occurrence of creative enterprise in the field of rhythmic activities. (76, 89) Romney (114) has hypothesized that competetive games, by virtue of the element of risk involved in participation in them, might have some elements of creativity in them.

Brown and Gaynor (78) have superimposed a "calisthenic-non-calisthenic continuum" on the traditional understanding of the scope of

physical education activities. The continuum is based on the number of potential action alternatives in a given situation. The more an activity approaches the non-calisthenic end of the continuum, the greater the number of action variables; hence, the greater the possibility of creative response on the part of the player. Brown and Gaynor assumed that the greater number of action variables presented action alternatives. The participant, in responding to those alternatives, may exhibit creative behavior depending upon what choice he makes and how successful he is in reaching his goal(s). Brown and Gaynor, on the basis of their theory, suggested that physical educators should consider the development of creativity as a primary goal in the structuring and planning of the physical education curriculum, especially when the activities involved fall on the non-calisthenic end of the continuum.

It would seem, on the basis of the Brown and Gaynor theoretical conjecture, that physical education activities can be structured so as to be less calisthenic and thereby more creative. It would also seem that some activities, on the surface, lend themselves more to creative outputs than others. Perhaps various activities at different stages in the teaching-learning process are more conducive to creative output. Activities can be said to be composed of two elements: the element of basic skills and the element of use of those skills within the structure of the activity. The more highly skilled participant is one who has not only grasped the skills but is proficient in their use. The act of learning basic skills is essentially an other-directed (eg., teacher-centered) process. Using those skills, on the other hand, may be essentially inner-directed (eg., student-centered). The beginning

student may be said to be more dependent upon the teacher, because he does not know what he does not know. This does not preclude creative enterprise on the part of the student. The teacher can be instrumental in facilitating even the beginning student to learn creatively.

It would seem that specific activities in and of themselves do not markedly determine the degree of creativity possible as an individual participates, because creativity lies in the way an individual participates rather than in the inanimate or static existence of the activity. Hence, Brown and Gaynor's ideas regarding action alternatives may be a superficial interpretation of traditional behaviors and may not indicate awareness of the internalization involved in the creative process.

Physical Education as Play.

There are elements of play in the movement activities in Physical Education. There are also elements of play in the creative process. Callois (18) defined play as being free (not obligatory), Play is separate (circumscribed within limits of space and time, defined and fixed in advance), uncertain (its course is not predetermined, nor is the result known beforehand, therefore, there is room for a player's initiative to influence the play), unproductive (creating neither goods, nor wealth, nor new elements of any kind; and, except for the exchange of property among players, ending in a situation identical to that prevailing at the beginning of the game), governed by rules (the rules are new legislation replacing ordinary laws and that legislation counts alone during the course of the game), and make-believe (it is a second reality or a free reality).

Callois' definitions of play seem to contain some of the elements of creativity. Maslow (49) defined creativity or "creativeness" as consisting of three general categories: primary, secondary, and integrated creativeness. In traversing from primary to secondary creativeness, the individual goes from spontaneous to deliberate, from intuition to hard thought, from daring to caution, from fantasy to testing, and from intrinsic to extrinsic evaluation.

In comparing Callois' ideas of play with Maslow's theory of creativeness, the following deductions or presuppositions might be appropriate. If play is free, it might be considered to be spontaneous just as is primary creativeness. If play is uncertain, there can be moments in which the intuition and daring of primary creativeness and the caution of secondary creativeness is operative. If play is make-believe, it can also contain elements of the fantasy of primary creativeness for its participants. If play is separate, it may at times require the hard thought of secondary creativeness. If play contains rules, it might be said to be deliberate and may require elements of testing as does secondary creativeness. If play is unproductive, so might creativity be unproductive when it is put to the process of verification, whether that verification and evaluation be intrinsically or extrinsically motivated. And, if there is an element of competition in play, there can be moments of intense deliberation, thought, caution, and testing on the parts of the players involved.

It seems justifiable to suggest that the correlative relationship of Maslow's theory of creativeness and Callois' definition of play is a tenable assumption.

Physical Education as Games.

Many, but not all, physical education activities are contained in a games' setting. It is perhaps in the more structured setting of the game that Maslow's secondary creativeness may best be fostered, since the element of "free play" is relatively absent in the presence of rules, boundaries, officials, and/or individual player limitations.

Games may be classified according to the relative dominance of the roles of competition, chance, simulation, or vertigo. (18) Each of these roles may further be placed on a continuum. Callois referred to the extremes of his scale as ludus and paidia. Ludus indicates that end of the scale on which discipline is dominant to the point of capricious anarchism devoid of individuality. At the other extreme of the continuum is a complete abandonment of discipline in the form of "carefree gaiety" and a "kind of uncontrolled fantasy." This is called paidia.

One might assume superficially that, for the purposes of developing the creative potential, the games which fall more closely toward the paidia end of the scale might be more productive of creative enterprise, at least in its beginning (preparation, incubation) stages. The assumption would seem valid since creativity has been said to be dependent upon, among other things, spontaneity and an openness to new ideas and new experiences. The assumption would not hold true in the final stage (verification) of the creative process, since it is in this stage that the individual must be capable of intense concentration and self-discipline if he is to determine the validity of his insight and thus cause the creative product to appear.

One might also stipulate at this point that, in relation to the Brown-Gaynor calisthenic-non-calisthenic continuum, the more action variables, the more game-like the activity. Therefore, there might be the logical deduction that the more game-like activity might foster creativity and that creativity can be related to the game's modality of physical education. But, the Brown-Gaynor continuum has been rejected in light of its apparent superficiality. Action variables may, in fact, contribute to the relative amount of creative potential inherent in a given activity; but they by no means tell the entire story of creativity within Physical Education. To reiterate: creativity lies within the individual as he relates to the activity, rather than within the activity itself.

The Knowledges and Concepts of Physical Education

Attendant to any educational endeavor are certain knowledges and concepts pertinent to the discipline. Knowledges and concepts within Physical Education or the study of human movement may be classified into seven categories. (48) The first of the classifications is movement forms consisting of descriptions of sports and dances, strategies, and tactics of competition, and knowledge of playing implements, surfaces, and enclosures.

The second classification is that of the mechanical principles of movement including principles of isometric and isotonic contraction; gravity, inertia, force, and leverage concepts; and principles of body positioning and movement patterning to accomplish specific tasks.

The third category is the structure and function of the moving human organism. This category consists of developing functional

understandings of body composition and structure, movement regulatory systems, and the effects of diet, age, sex, and physical environmental conditions on human movement.

The fourth classification consists of movement and the person which includes the interrelationships between movement experiences and personality, developing concepts of movement and group dynamics, developing skills in aesthetic expression, and the learning of nonverbal communication.

The fifth classification is learning how to move. It consists of theories of motor learning and deals as well with internal physiological and psychological conditions and external environmental conditions affecting the development of movement patterns.

The sixth category is movement and health, covering accidents and injuries associated with sport, as well as the prophylactic and therapeutic uses of movement.

The seventh classification is movement and meaning in which the philosophical and sociological interpretations of movement are propounded.

Mackenzie viewed education as a freeing and integrative process, educational success being gleaned from accurate conceptualization on the part of the learner. Within his classification system, he espoused the idea that exploration is an all-important tool for teaching young children (preschool through grade nine). A conscious effort toward synthesis of knowledges and concepts is attempted in grade twelve. On the basis of the preceding discussions of creativity, the importance of exploration and synthesis in the development of the creative potential seems apparent. One might consider the possibility that a beginner in

any endeavor might be akin to a young child as far as the needs for exploration and synthesis are concerned. The major responsibility of the school is to prepare students who will be capable of acquiring further knowledge and of making their own individual generalizations. The student, in this sense, concentrates on the process of learning during his educational career.

The creative process and the development of creative potential are dependent upon synthesis, conceptualization, and the acquisition of knowledge in an openminded system of belief. Mackenzie proposed a program of Physical Education which purports to contribute to the development of those characteristics. The incorporation of that program might support the development of the creative potential.

Physical Education as Purpose and Process.

Jewett (132) pointed out the inadequacy of so called well-balanced physical education programs consisting of a great variety of activities. She preferred the development of a program based on a conceptual framework which eventually led students to accept responsibilities for their own planning and learning. The physical education program in such a framework may be structured around two groups of concepts, one of which is purpose-oriented and the other of which is process-oriented.

All of the concepts within the framework were interrelated with all the other concepts. The points at which the lines of interrelation intersect point out the desired educational or behavioral outcomes of movement experiences. Purposes and processes interact in terms of

bodily development, movement skills, and cognitive-affective development.

The key purpose-oriented concepts are (1) that the individual develops through movement, (2) that the individual attempts environmental adaptation and control through movement, and (3) that movement is a means of expression and/or communication.

The key process-oriented concepts are that movement may be (1) generic, i.e., inclusive or general as opposed to specific except as it concerns a genus; (2) ordinative in that it is definitely ordered and arranged or serves to order and arrange; and (3) creative, resulting in something new, inventive, unique, or original.

Movement, according to Jewett, may be creative in and of itself. Since the individual acts as an integrated organism, movement itself may be a ramification of the creative process as it is ongoing.

Summary.

The following ideas emerged in the study of physical education activities.

1. Viewing Physical Education only as a series of varied motor skill activities is inadequate in terms of the possibilities concerning the part which Physical Education might play in the educational stream.
2. The program of Physical Education within the total school curriculum may be viewed as a series of human movement activities in which there is often an element of play and which may appear in the form of games.

3. Attendant to the activities and the movement therein are certain knowledges and concepts which may be directly or indirectly taught and which may be purpose- and/or process-oriented.
4. Thus, Physical Education affects the behavioral domains of the whole man and contributes to the development of human potential and capacity.

CHAPTER VII

PHYSICAL EDUCATION METHODOLOGY

Hypothesis.

In allowing for creative development, the method used is as important as is the structuring of an optimum teaching-learning environment.

Sub-hypotheses.

1. The selected outcome(s) of the learning experience could be a determinant in the selection of method, and the method selected might in turn influence the outcome of the learning experience.
2. There are activities in which each of the steps of Mosston's spectrum of teaching styles might be best developed.
3. Certain phases of the teaching-learning process (eg., beginning vs. advanced) determine the style used and the effectiveness of that style.
4. Teaching styles range from command to discovery, depending upon the placement of the activity or phase of the activity on the Brown-Gaynor calisthenic-non-calisthenic continuum.
5. The teaching style determines, in part, the effectiveness of the internal environmental structure.
6. The personality of the teacher plays a part in choice of method and effectiveness of applied method.

7. The student personnel for whom learning experiences are arranged determine the effectiveness of the method used.
8. The method used in part determines the cognitive-affective behavior level(s) which students attain.
9. There are activities in Physical Education which have meaningful potential in providing for creativity.

Introduction.

Perhaps the most important rule of thumb concerning methodology as it relates to creative development is that creativity must be allowed to occur. That is to say, the student, once he has grasped the basic skills, must be left alone to facilitate the possibility of incubation and insight. In allowing for creative development, the teaching-learning method used is important and contributes to the structuring of an optimum teaching-learning environment.

The term "method" connotes a specific structure, a set way of doing something, a "regular, orderly, definite procedure or way of teaching, investigating,..." "...usually in steps...." This rigid interpretation of the organization of teaching traditionally has been interpreted as "command teaching" in methods' books. "Style," on the other hand, connotes less structure, more originality, more intimacy, and greater leeway for teacher digression. Style seldom dictates method, although method has often determined style.

Mosston's Spectrum of Styles.

Mosston (53) has developed a range of teaching styles specifically designed to elicit increments of student involvement in the learning

process. His "spectrum of styles" leads toward greater student responsibility in the teaching-learning process and makes provisions for greater choice on the part of the teacher. He sets forth seven styles in the spectrum: command, task, reciprocation, small group, individual, guided discovery, and problem-solving.

Command teaching is a teacher-centered process. The student follows direct orders concerning the performance of the skill. Each skill is analyzed according to specific steps in its performance; the teacher commands each step in order, and the student responds to each command by performing that step to the best of his ability. (53, p. 19)

Teaching by task gives the student the responsibility of doing or performing a teacher-assigned task. The teacher does not command each step in the task, but, after confronting the class with a task, allows the student to perform that task in his own individual way. (53, p. 31)

"Partner" is the key word in reciprocal teaching. The student, in this instance, assumes some of the responsibility of evaluating a partner or of helping a partner learn to perform adequately the task set by the teacher. Student partners offer critical comments regarding the performance of a task, thus giving each other clues as to what is right in a performance as well as what needs to be improved. (53, p. 71) Reciprocity can be evidenced in teacher-student and student-student relationships in the learning process.

Learning in the small group is an enlargement of the partner concept. In this style greater diversity of peer evaluation is possible by virtue of the numbers (more than two) of students involved. The group

has one focus--on the "doer"--and offers critical comment on the performance of each "doer" in turn. Many ideas concerning improvement of performance are promulgated; hence, more efficient skill correction, or at least more efficient identification of erroneous and correct skill performance, would seem possible. Hopefully, during small group activity, enough diversification of skill and comment will be presented to allow the individual to progress to the individual program style in the spectrum. (53, p. 93)

The fifth style is the individual program in which each student assumes the responsibility of self-evaluation. The student learns to ferret out his own shortcomings and to seek help in correcting them. It is important at this point that the student learns to recognize, not only his shortcomings, but his achievements as well. The student in the individual phase must still rely on someone else for the answer(s) to his difficulty(ies). (53, p. 97)

Guided discovery is meant to provide opportunities for the student to find the answers for himself. This style is based on the psychological premise that cognitive dissonance (34) necessitates inquiry which in turn may lead to discovery which relieves the dissonance. The inquiry is student-directed or -centered; the discovery occurs primarily via clues from the teacher. Guided discovery relies on the student's ability (developed through the preceding styles) to recognize dissonance and on his own internalized desire to restore balance where imbalance exists. This style is still somewhat teacher-directed in that the teacher provides the clues through which the student's inquiry may result in meaningful, successful discovery. (53, pp. 144-147)

The seventh style, problem solving, is guided discovery without teacher-incited clues. At this point the student assumes responsibility for providing or searching for his own clues which may lead to discovery or solution. The teacher presents the problem, and the student assumes the responsibility (complete with discipline and command, task assignment, evaluation, inquiry, and discovery) of solving the problem. The student, at this point, is almost completely involved in and responsible for the learning process. (53, p. 183)

This, according to Mosston, is the point at which the student begins preparation for the final step: creativity. When the student learns to ask the question (i.e., to identify the relevant problem), he has reached the creative level. (53, pp. 229-230)

Examination of the Sub-hypotheses.

Selected Outcome Influences Choice of Method.--One might hypothesize that the selected outcome(s) of the learning experience could be a determinant in the selection of method and that the method selected might in turn influence the outcome of the learning experience. The extremes of the hypothesis would seem to be, simply, the difference between demanding complete, submissive, accurate response on the part of the student in exactly the way the teacher anticipates or expects, to complete lack of direction on the part of the teacher and subsequent limitless response(s) on the part of the student.

If the learning experience must be exact in order for the outcome to be judged a success, the method used must necessarily be command-oriented. For example, a student learning to execute the inward dive

in a pike position must know exactly how to stand, how to begin, and how to execute the dive after he has left the board if he is to dive successfully and safely. The skill involved must be taught in a "this-is-how-to-do-it" manner; in short, the skill must be taught by command.

On the other hand, the student might be given more leeway, once he has learned the basic inward dive, in experimenting with the inward somersault, the one-and-one-half and the jackknife, depending on his skill development. In these latter cases, the outcomes of the learning experiences (i.e., becoming familiar with various combinations of movements progressing from the inward dive) are less direct; hence, the nature of the learning experience is less directed by the teacher and there is more latitude in judging successful outcome(s).

In considering yet another facet of the hypothesis, if the intended outcome of the experience is for the student to discover and experiment with various combinations of movements and he is allowed to practice those combinations only after they have been presented to him by command, then the method used has adversely influenced the learning experience. The outcome of that experience may be identical to a less-structured experience; but the experience itself has been drastically altered, and questions might be raised concerning the amount of learning judged to have taken place. There may be many means used to reach a specific end. The teaching method influences the means directly and the end indirectly.

The method used in presenting the learning experience must be correspondent to the intended nature of the learning experience. Secondly, the method used must take into account the intended outcome of that learning experience and must be such that it enhances the

possibilities of securing that outcome. If the teacher feels that there is one best way of learning a skill and feels that it is of great importance that the student learn the skill exactly, then the teacher must use the method that best precipitates such an objective.

Activity Determines Style.--A third hypothesis might be that there are activities in which each of the steps of Mosston's spectrum of teaching styles might be best developed. Probably the most obvious example is the area of gymnastics (i.e., free exercise, Danish gymnastics, and apparatus work). In each of these variants of rhythmic activity the student may be given the opportunity to make up a routine suitable to his own skill level. In gymnastics there is a relative absence of rules, a relatively high degree of individuality, and freedom to structure aesthetically appealing patterns of movement with a system of rewards directly proportionate to originality. Any team game, on the other hand, might be said to be more command-oriented by virtue of the restrictions placed on the participant in the forms of boundaries, rules, teammates, referees, skill techniques allowed, and other controlling factors specific to the game.

The fallacy of the preceding suppositions should be immediately apparent. Every physical education activity possesses (in varying degrees of rigidity) rules, boundaries, a fixed means of scoring or a system of rewards, a time limit, training procedures, various skills which must be mastered for successful participation, and varying amounts of manipulative equipment (or equipment upon or around which the participant must manipulate himself) for participation, as well as the

biological limitations of the performer. It would seem that the hypothesis that certain activities foster creativity more than others is not a valid one.

Phase Determines Style.--A more accurate hypothesis might be that certain phases of the teaching-learning process in a physical education activity determine the teaching style used and the effectiveness of that style. Moreover, teaching-learning style is related to creativity. Physical education activities' skills have been traditionally ranked from beginning to advanced in relation to developmental sequences of the human organism or according to relative difficulty of the skill involved. There is a degree of danger involved in physical education activities, too; and it is safe to assume that the better-skilled performer is better able to cope with both the real and the imagined dangers of a given activity. Perhaps the safety of the participants has been one of the determinants in the relative prominence of the command teaching style in physical education. The ingenuity of the advanced performer is seen infrequently in the usual physical education class taken merely to fulfill an academic requirement. In a well-organized class, the participant grasps the preparatory skills of an activity. He and the teacher alike develop the confidence necessary for more self-directed learning experiences and the teaching style and/or method then can be less command-oriented. As the teaching style becomes less command-oriented, the probability of a recognizable creative experience occurring increases.

Brown-Gaynor Continuum and Style.--The hypothesis that teaching styles range from command to discovery, depending upon the placement of

the activity or phase of the activity on the Brown-Gaynor calisthenic-non-calisthenic continuum, seems to be tenable. Calisthenic-type activities are often those which are teacher-directed. Efficient use of teaching time would suggest that those skills and activities possessing this kind of rigidity are best taught by command even though they could conceivably be taught by use of one of the other teaching styles. The more action variables possible in the activity, the more important is student originality. The more important is originality, the less command-oriented is the teaching style. Therefore, teaching-learning style has greater effect on creativity than the activity used.

Style and the Internal Environment.--Teaching style in part determines the effectiveness of the internal environmental structure, assuming that the external or physical environment meets adequate (minimum) standards. Mosston refers to "crossing the cognitive barrier" by means of a specific teaching style. If the student is expected to respond in a creative manner, the teaching style must provide for greater student involvement in the learning process, for a greater incidence of self-directed learning experiences. The teaching style allows the student to develop the confidence and abilities necessary for self-directed learning.

Teacher Personality and Chosen Method.--The teacher personality plays a part in choice of method and the effectiveness of the method when it is applied. An authoritarian personality would probably not choose to use problem-solving as his method; were he to use that teaching style, he would have greater difficulty in using it as effectively as a less authoritarian person. Mosston, however, assumes that the teacher,

as well as the student, can progress from strict command teaching and learning to problem-solving and guided discovery teaching-learning experiences. In terms of personality studies which indicate the stability of the normal personality system, it would seem that Mosston's assumption should be challenged.

The Student and the Method.--The hypothesis that the student personnel for whom learning experiences are arranged determine the effectiveness of the method used is closely allied with the hypothesis concerning the skill and/or developmental level of the students. Depending upon the nature of the phase of the activity being taught, it would seem reasonable to assume that, in some instances, such as for reasons of safety, the command method would be the best choice. On the other hand, there might, for example, be times in an advanced skill class when problem-solving would be the most efficient method, provided the class was ready and willing to encounter that kind of experience and preferred approaching the problem in that way. However, it should be noted that safety knowledge could utilize problem-solving styles, and advanced skill techniques could be taught by command.

The Method and Behavioral Levels. In considering the hypothesis that the method used in part determines the cognitive-affective level(s) which students attain, it seems reasonable to assume that, since values must be internalized, it is more probable that the student will value an activity if he is allowed to discover that value for himself. It is, however, still possible that he will discover the same or a similar value through a command teaching style. Mosston felt that the student broke the cognitive barrier in passing from the individual program to

guided discovery. He theorized that it was at this point that the student broke away from acquiescence and became more intellectually involved in the learning process. In becoming intellectually involved in the learning process it is to be assumed that there is some behavioral change in the affective domain, even though it may prove difficult to determine the level of that change. It may be assumed also that creative patterns of thinking are fostered as the cognitive and affective barriers are transcended away from responding and comprehending and toward synthesis and evaluation.

Physical Education Activities and Creativity.--There are activities in Physical Education which provide for creativity. It would appear that there must be qualifications attached to such an idea. For example, activities such as gymnastics and dance would seem to be creatively fertile areas especially in advanced stages due to the fact that routines and patterns must be constructed and judged according to their originality. On the other hand, the rules of field hockey are the rules of field hockey and are relatively invariant. However, each player in a field hockey game must approach each game situation in a creative manner, and the ingenious player might be said to be acting creatively in moving the ball down the field to the goal. His actions and reactions might be said to be creative in that he has successfully synthesized the basic skills, has reinterpreted them in terms of the immediate problem, has analyzed and evaluated the movements of his opponents, and has successfully outwitted his opponents in scoring the goal. He has created a tactical structure which allows him to operate with situational success.

If the examples which Mosston used in discussing his teaching styles are to be accepted, then the hypothesis that creativity is necessarily limited to certain activities is an invalid one. Mosston's examples are taken from many activities, and his premise is that the style is adaptable to any activity. Finally, one cannot then hypothesize that there are activities in which creativity cannot be expected to occur. One can, however, stipulate that there might be a greater incidence of creative response in some activities (eg., synchronized swimming) as opposed to other activities (eg., marching), depending upon the action variables involved, specifically as those variables include skill levels, expected outcomes, the personalities of the students and the teacher, and the internal and external environments of the teaching-learning situation.

Summary.

Some general concepts have emerged in the discussion of methodology, particularly Mosston's spectrum of styles, as it relates to Physical Education.

1. There is a reciprocal relationship between content and method which is directly influenced by the objectives of the teaching-learning experiences as the participant sees them.
2. The teaching-learning process is an interaction of personalities in which it is essential that people become actively involved if maximum learning is expected to occur.
3. It is not the activity itself which necessarily determines the teaching style but the learning level of the learner when he

is part of that activity. The teacher is guided as to choice in method by the student, rather than the subject matter.

Mosston has said that creativity is the final step in the spectrum of styles. The author wishes to suggest strongly that creative insight can occur even in a command teaching style. It would seem to be the responsibility of the teacher to recognize opportunities for creative development and to allow the student time to utilize those opportunities. Further, it is possible that, even in a highly teacher-centered learning situation, a student might not only experience creative insight but actively pursue that insight to fruition. It is, however, important to point out that, even though creative insight might occur and be pursued, the skills which the learner brings to such a pursuit will influence the effectiveness of his system of verification.

CHAPTER VIII

THE MODEL AND ITS INTERPRETATION

In order to explore the relationships and interacting processes between Physical Education and creativity, a conceptual model seemed necessary to enhance lucidity and clarity. The final form of the model was constructed as a result of concentrative effort, innumerable creative "doodles," and a multitude of attempts at model construction on the part of the author. Each of these exercises was an attempt to ferret out the interrelationships of the creative potential and the various aspects of Physical Education; to wit, the element of play, the element of formulation of Physical Education's conceptual systems, and the rather standard consensus of interpretation of typical activity programs based on physical developmental needs. The model served to point out some of those relationships insofar as its construction brought into focus different ideas concerning the interaction of the parts.

The original model inception was in the idea of Physical Education as a universe filled with many planets, each of which influenced the others. This original model contained a sun-like sphere depicting Physical Education, an earth-like sphere depicting Callois' theory of play, a Mercury-like sphere depicting Mackenzie's conceptual system of Physical Education, and a satellite or meteorite sphere depicting the creative process. Each of the spheres, with the exception of the creative-process-sphere, was placed on a prearranged track. The

creative process was depicted as a freely moving satellite, its movement being implied by the lack of a definite track. All of the spheres were depicted as being capable of rotating in addition to following an orbital track. The Callois sphere orbitted in a track depicting an apogee and a perigee of paidia and ludus.

The point at which an attempt was made to assign paidia and/or ludus to the apogee and/or perigee of the orbit was the one at which major inadequacies in the model were noticed. The first inclination was to think of a "high point of joy." Further reflection, however, questioned that interpretation in light of the possibility of a high point of physical activity which might conceivably be found in the strict discipline involved in sport. To arbitrarily assign either paidia or ludus as the high point or the low point would have added implications which the study did not intend and would have involved a value judgment on the part of the author which lacked face validity.

The second question of model integrity concerned the placement of the sphere of the creative process. That sphere was meant to indicate the pervasiveness of creativity; hence, the sphere had to reflect on all other spheres at different times and in different ways. This was not possible to accomplish except by way of explanation; and, at a certain point, the amount of verbal explanation necessary for model lucidity tends to destroy the basic purpose of a model--to present a total concept as clearly and simply as possible.

Finally, none of the parts of the model moved (even though movement was implied), and movement of the model parts seemed essential to the ideas of relationships between and among Callois' ideas of play and

games, Mackenzie's ideas of knowledges and concepts of human movement, physical education activities as viewed traditionally, and the creative process. The idea to construct a mobile (Figure 1, p. 85) thus grew out of the structure of the original model which looked good on paper, sounded good in explanation, but did not prove to be practical in reality.

The most tedious part of making the mobile was making decisions concerning the shape(s) and the color(s) of its component parts. The process involved a great deal of "playing creatively" with materials and ideas. As has been mentioned earlier, the act of constructing the mobile served to point out new possibilities concerning the relationships of the theories; those relationships in turn pointed out new possibilities in the mobile construction. The type of mobile constructed was chosen in preference to other types because it provided greater mobility of each of the component parts, thus intentionally implying the intricacies of their relationships. The shapes of those parts serve to illustrate the distinct differences in the concepts presented (i.e., Callois, Mackenzie, the traditional approach, and the creative process). The colors chosen also serve to differentiate the parts as well as to relate the parts to each other: the primary colors are separated in the creative process and are found in various combinations in the other parts of the mobile.

Green seeks to impart the idea of reflection, of internalization. It is dark (hence, a quiet color) and thus seemed to represent Mackenzie's ideas about knowledges, concepts and understandings of Physical Education. Orange is a bright, aggressive color; hence, it seems to

represent the spirit of play and games as described by Callois. Purple is a combination of all of the primary colors and is thus used to represent Physical Education in its traditional totality as a sequence of developmental physical activities. It is purposely attached to Callois' balance arm, because the most prevalent lay inclination is to associate play, games, and physical activity with Physical Education. The pinwheels represent creativity and the creative process and are composites of the primary colors in their true shades.

The most important aspect of the mobile concept is that it is a combination of delicately or intuitively balanced parts. Any part can contribute to or destroy the balance. The lengths of the connecting strings, the relative weight of each of the parts, and the positions of the connecting lines on the balance arms contribute to the balanced interaction of the whole. The whole mobile rotates, being influenced by even the smallest velocities of air currents. The parts rotate, being influenced by those same currents. Different parts of the mobile reflect each other in different ways at different times and at different speeds depending upon the air currents (i.e., the environment in which the mobile is suspended).

The entire mobile represents Physical Education in total. The connecting threads and/or balance bars may be said to represent the interrelationships of the teaching-learning process and the subject matter of Physical Education. The way in which the air currents affect the entire structure may be said to depict the environment which may or may not contribute to the balance of the structure and the inter-relationships of its moving parts.

Section four, the creative process, is purposely attached to the main balance arm to indicate that it may or may not be included in physical education instruction through a conscious effort on the part of the teacher to develop the creative potential of his or her students. Further, instruction aimed at this development may or may not contribute to the balance of the program, depending upon how and where it is included.

The colors used in the model are the primary ones and combinations of the primary ones. The fourth hue is clear (white); it affects the intensity of the colors. Section four is defined in definite sections of color: red, yellow, and blue. The white (clear) indicates the preparatory stage of the creative process; the hue, as well as the stage it represents, can and does affect the other colors. The blue indicates the incubation stage; it is a quiet color indicating the thought processes which occur during that stage, including the need for the creator to reflect, disseminate, and synthesize his thoughts. The insight stage is represented by the color yellow which is intense, indicating the suddenness and the brightness with which creative insight (the "aha" phenomenon) occurs. The verification stage is represented by the color red; it is a strong, pervading, violent color indicative of the intensity of effort on the part of the creator to verify his creative product. The primary colors were used to indicate the basic universality of the creative potential. As the parts of section four revolve, one can see many combinations of these primary colors (specifically, orange, purple, and green) indicating the fact that the steps of the process do

not necessarily occur independently but may overlap and occur simultaneously.

Sections one, two, and three are represented in various combinations of the primary colors. This serves to indicate the idea that any of these concepts may be taught using the creative approach and allowing creativity to develop. They can also be taught independent of the creative process and the development of the creative potential of the students.

Callois' paradigm is represented by two similar forms, one of which has two main points, the other of which has four main points. The former is representative of Callois' concept of play, from ludus to paidia. The latter represents his definitions of games, including the roles of agon (competition), alea (chance), mimicry (simulation), and ilinx (vertigo).

Mackenzie's theoretical constructs are represented by the green forms. One of these shapes is rather ill-defined and lacks the geometric precision of its counterpart. This form represents Mackenzie's theory of concepts. Concepts may be said to be somewhat less observable and not as easily measured as specific, well-defined knowledges.

The pinwheel at first glance seems to be out of place and obtrusive in the general construct of the mobile. Upon reflection, however, it is just this kind of childlike, traditional form that perhaps best befits the phenomenon of creativity as a universality requiring an attitude of playfulness if it is to result in fruition.

The triangle placed upon the connecting thread between the main balance arm and pinwheel arm serves to point out one possible way in which learning experiences in Physical Education can be arranged to sponsor creativity. It indicates the relationship of content and outcome through process. The styles indicated on that triangle are Mosston's. (53)

The mobile may be interpreted as a synthesis of the major emphases in the discipline of Physical Education. (Figure 1, p. 85) The field is traditionally viewed as a developmental sequence of physical activities. The parts of the sequence can be generally described as basic motor activities, rhythmic games, team sports, dual sports, and individual sports. Each of these parts can make claim to developing "knowledges and conceptual understandings of human movement," since movement is the medium through which they are taught. Mackenzie (48) has said that these knowledges and concepts may develop around the following categories: movement forms, the mechanical principles of movement, the structure and function of the moving human organism, movement and the person, learning how to move, movement and health, and movement and meaning. In addition to the participation in activities and the development of understandings concerning movement, Physical Education can be said to be play oriented. Play is implied in the word "game" and in the word "sport" even though for some individuals games and sports might involve a great deal of arduous work. Callois (18) theorized four basic categories of games: <u>agon</u> (competition), <u>alea</u> (chance), <u>mimicry</u> (simulation), and <u>ilinx</u> (vertigo), each of which was interspersed with <u>paidia</u> (joy) and/or <u>ludus</u> (discipline).

Physical Education is, then, a developmental sequence of play- or game-oriented physical activities through which knowledges and conceptual understandings of human movement are taught. Those activities are taught according to various methods or styles. Mosston (53) proposed a series of methods or styles ranging from a highly authoritarian command style to a student-centered creative style with the intermediate steps of teaching by task, through reciprocal partner relationships, small groups, individual techniques, guided discovery, and problem-solving techniques. Mosston's intended purpose in the delineation of styles was to structure an environment in which the student accepted greater responsibility for the teaching-learning process and thus became more vulnerable to creative insight and enterprise.

Some general hypotheses will perhaps add credence to or at least provide some insight into the interpretation of the model. It has been assumed that the creative process is composed of the four stages called preparation, incubation, insight, and verification. Let us hypothesize, for instance, that certain basic skills in an arbitrary activity are taught, for one reason or another by command or task--i.e., by a relatively teacher-centered style. This might be said to be the preparatory stage. The logical antecedent hypothesis might then be that the use of those basic skills, for example in terms of the practice of those skills, is accomplished through the reciprocal and small group teaching styles which allow greater freedom for acceptance of responsibility on the part(s) of the student(s) but within a relatively teacher-

controlled environment. As the student practices those skills, they become a part of his repertoire of skills (i.e., they are internalized); and one might speculate the possibility of incubation occurring. Insight might occur at any time during the teaching-learning process. The verification of those insights might be said to be the use of those basic skills in terms of and in addition to the experienced insight. This must necessarily be an extremely personal process, hence we can hypothesize that the more student-centered styles of guided discovery and problem-solving might be more effective in bringing about the desired result. Creativity then emerges as a result of a combination of teaching style and student involvement within the environmental structure of the physical education program. That environment is in turn influenced by, among other things, the teacher, the basic learning skill level(s) of the student(s), and the nature of the activity being taught.

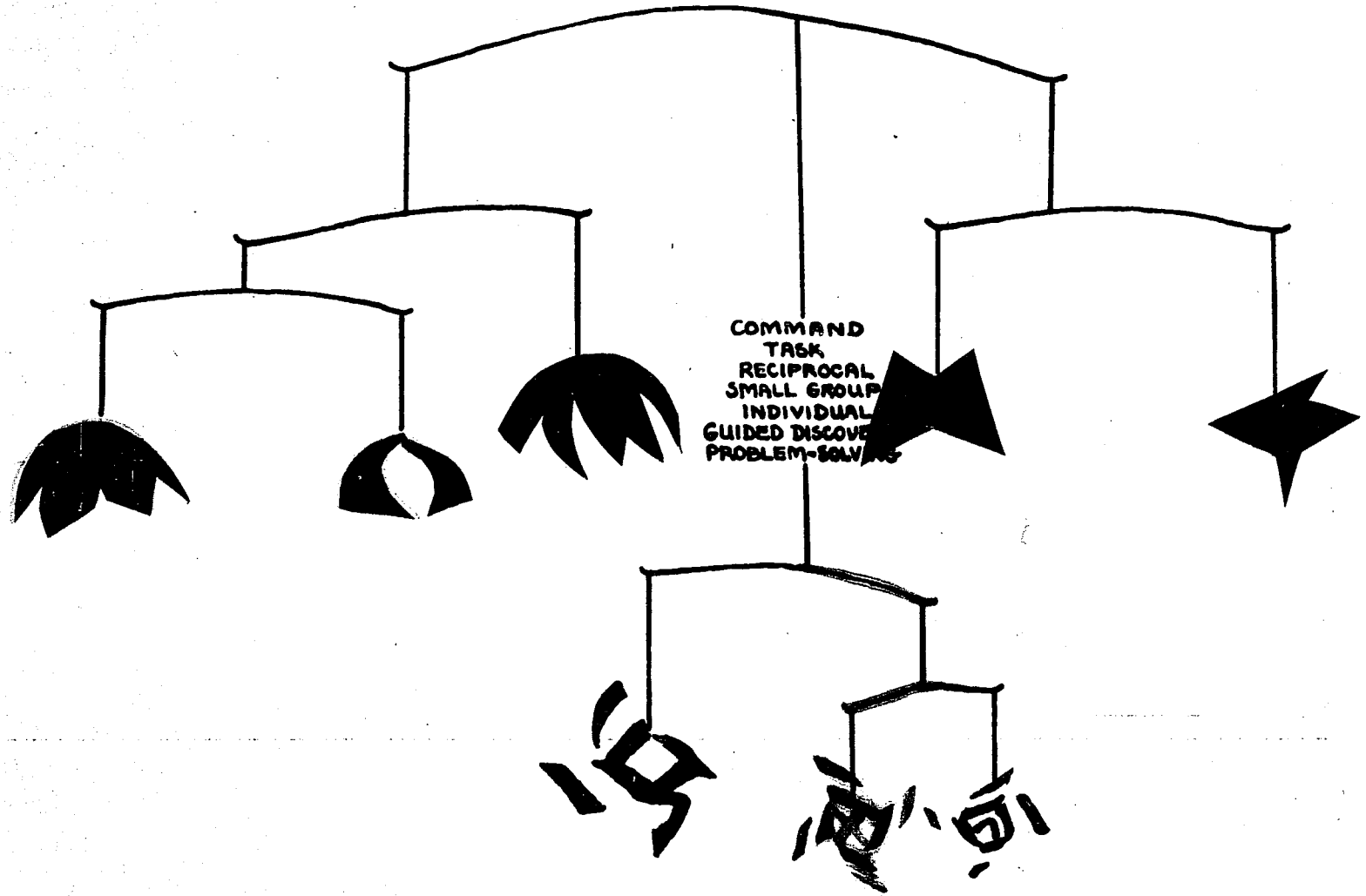

FIGURE 1 – THE MODEL

PHYSICAL EDUCATION
MODEL INTERPRETATION

(SUBJECT MATTER)
ACTIVITY CONCEPTS

(SUBJECT MATTER)
KNOWLEDGES &
UNDERSTANDINGS

TEACHING-LEARNING

PLAY & GAMES			TRADITIONAL	CONCEPTS
Agon	p	l	Basic motor activities	Forms
Alea	a	u	Rhythmic games	Mechanical principles
Mimicry	i	d	Individual sports	Structure & function
Ilinx	d	u	Dual sports	Person
	i	s	Team sports	Learning how to move
	a			Health
				Meaning

Preparation
Incubation
Insight
Verification

CREATIVITY

TABLE II

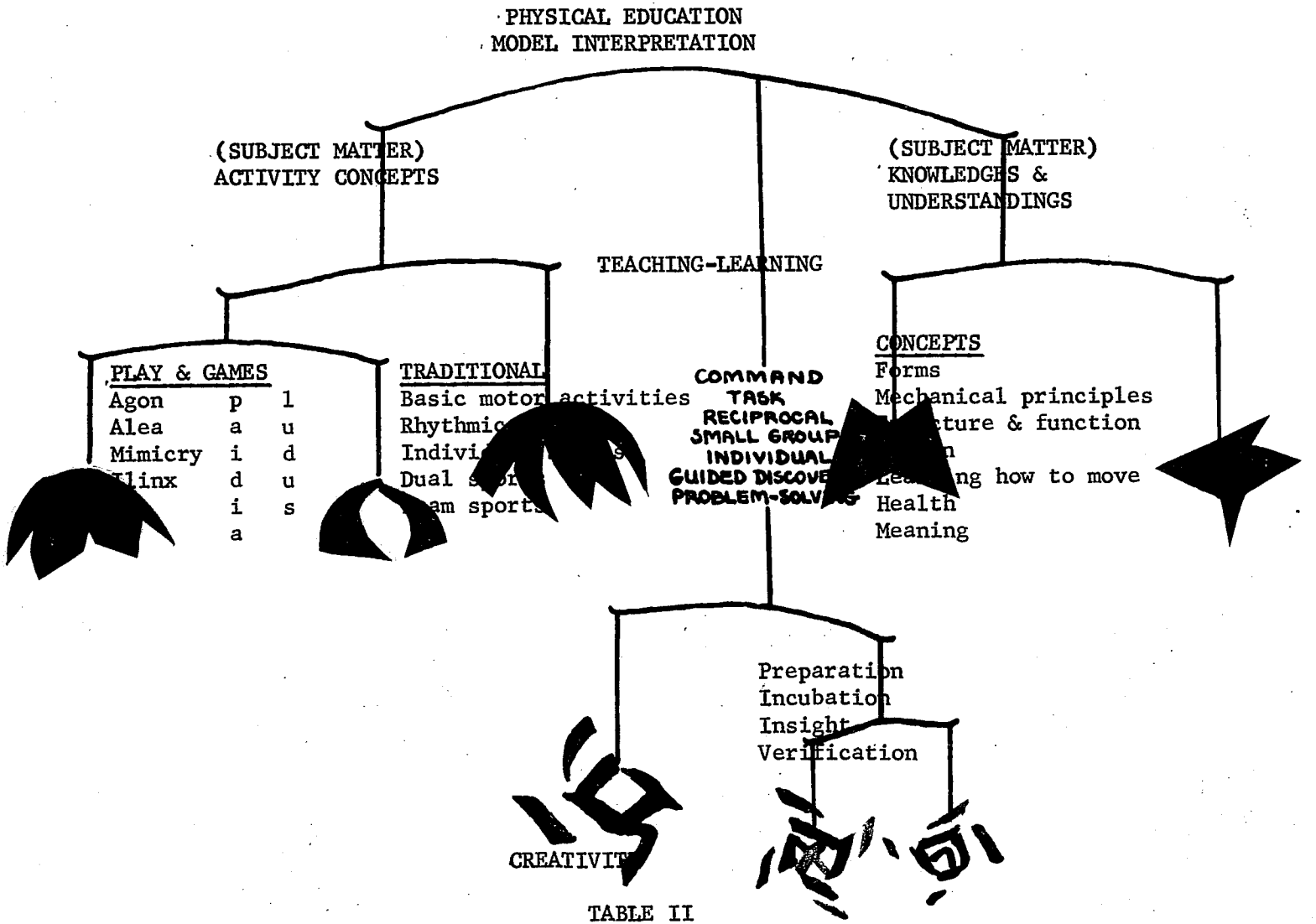

TABLE II

FIGURE 1 – THE MODEL

CHAPTER IX

PROSPECTUS

Premise.

The premise of this study was that the creative process can be developed and the creative personality of each student enhanced through physical education programs. Creativity can be fostered through Physical Education.

Creativity.

The major hypothesis concerning creativity was that such a phenomenon does exist. Sub-hypotheses included propositions that creativity could be defined, that there exists a generally acceptable single definition of creativity, that creativity is observable, and that creativity can be taught.

Creativity can be defined as the ability to make something from nothing, to find a new use for an old object or an old use for a new object. Creativity is the ability to solve problems in unique ways. Creativity may be artistic, scientific, literary, or a new procedure or method for doing something. Too often the term "art form" is confused with "creative expression." (116) Although an art form may be significant of creative expression, creative expression does not necessarily result in an art form.

One might say that creativity is a "synthesis...of ideas or concepts" (as opposed to an analysis). (41) "Creative experience does

not need to result in an original discovery, in a new idea or combinations of ideas, to be of value." (41, p. 118) Greater importance is attached to how the individual experiences what is creative for him in educative problem-solving, than to how socially valuable his discovery is. The relevance of the material presented to the individual is the crux of education. It is important to the development of what Maslow (49) refers to as "self-actualization" and what Allport (2) calls the development of the "propriate self."

The Creative Process.

The major hypothesis concerning the creative process was that creativity and its products are manifested through a specific process called the creative process. Sub-hypotheses included ideas regarding the nature of the structure of the creative process, the relationships of the parts of that structure, the place of the creative product in the process structure, and the question of whether or not the creative process could be taught as a separate entity leading toward truly creative enterprise.

The creative process is the way in which the innovation or creation occurs. The process includes periods of preparation, incubation, insight, and verification. The problem-solver prepares himself and his materials, works toward the solution, discovers a possible solution (perhaps with the gestaltist's insight at an odd moment), and determines the validity of the solution. In applying the process one must be capable of making decisions, forming or assigning temporary values at each step in the process, and not infrequently following hunches. (10, 36, 38, 39, 119, 73)

The Creative Personality.

The major hypothesis concerning the creative personality was that there is no readily available and all-inclusive profile of that personality. Antecedent sub-hypotheses developed from the major hypothesis concerning the nature of the creative potential, the identifiable characteristics of the creative personality and their interrelationships, and the relationship of those personality characteristics to the structuring of an observable product with recognizable creative characteristics.

Creative potential is that innate quality (present in variant degrees in different people in different situations and at different times), which is evidenced by what might colloquially or simplistically be referred to as each person's "inventiveness." Personality traits of representative persons who are said to be creative have been tentatively identified by numerous authors in various disciplines; but not every creative individual possesses all of the traits of the creative personality nor does the person who has these traits automatically possess and/or exhibit a high degree of creativity. (41, 69) The number of identifiable personality traits included in the creative "norm" aptly serves to point out that each person might have this nebulous creative potential, but that it may never be demonstrated in such a way as to be observable and/or measurable.

Creative potential is highly individualistic and difficult to estimate. To be successful in developing the creative potential requires a knowledge of the process, a carefully structured environment, the inclusion of a variety of activities, and at times an almost

complete abandonment of traditional teaching methods, as well as a sincere dedication to the concept of the worth of the individual and his ideas. A quantity of mutual trust and respect should exist among teachers and students if the creative potential is to be realized.

The creative personality has been most succinctly described by Torrance (120) and Haefele (34). Torrance suggests ten characteristics which are most evident, but not all-inclusive, in the creative personality:

1. Intellectual courage and courage of convictions
2. Curiosity
3. Independence of thinking
4. Independence of judgment
5. Willingness to take risks
6. Intuitiveness
7. Absorption in tasks
8. Persistence
9. Unwillingness to accept things on mere say-so
10. Visionary characteristics

(120)

Haefele (39) describes the creative personality in terms of the "creator's" relation to others, job attitudes, attitudes toward self, and "other characteristics." In addition to those characteristics described by Torrance, Haefele includes dominance, conventional morality, little interest in others, adaptability (and high tolerance for ambiguity), integrity, emotional stability, less self-acceptance, great introspection, spontaneity, and adventurousness; in short, complexity as a person.

The creative personality is one who stands out in the crowd by virtue of his unorthodox personality (unorthodox by conventional standards sometimes to the point of appearing undisciplined and nonconforming) and/or his atypical contributions to the class. (75, 3, 13,

38, 39, 59, 119, 120, 73) He is different from the other members of the group in which he has been placed and frequently shows little or no inclination to conform to that group. He is a "loner" in varying degrees.

The Teaching-Learning Environment.

The major hypothesis concerning the teaching-learning environment was that the environment in which the creative individual works best is one which he, himself, must structure. That environment cannot be deliberately inserted into the school setting. Sub-hypotheses were centered around the qualifications of a "teaching-learning environment," whether any such environments were specifically conducive to the development of creativity, and whether there were environments in which creativity could not be expected to occur.

Exploration of the topic of environment raised a basic issue concerning the existence of, differences between, and similarities between internal (psychological) and external (physical) environments and their relationships to creative development.

Physical Education Activities.

The major hypothesis concerning physical education activities was that there are varieties of movement activities in the physical education curricula, some of which may lead to the development of creativity. Sub-hypotheses were developed concerning categorization of those various movement experiences, the concept of Physical Education as a separate discipline, the relationships between movement and the

development of creative potential, and the relationships between physical education movement experiences and the development of the creative potential.

Spectrum of Styles.

Mosston's spectrum of teaching styles (53) was assumed to be the most recent and innovative approach to physical education teaching methods, in addition to being one text on methods specifically designed to evoke creative student response. The spectrum was investigated in terms of its relationships to the range of movement activities within the physical education curricula.

The Model and Its Interpretation.

A mobile was constructed to visually depict the major focus of the study, i.e., the relationship of Physical Education to creativity. Physical Education was conceptualized with reference to its traditional meaning, the knowledges and understandings which Mackenzie suggests, and Callois' theory of play and games. Creativity was treated as a theoretically separate entity which could successfully contribute to the balance of the physical education program, depending upon its place in the program and the nature of the teaching-learning environment in which the program existed and to which the program contributed.

Conclusions.

Perhaps the most important concept to have emerged from the preceding study is that of sequence. The physical and mental developments of the human organism follow specific sequences. The creative

process follows a sequence. The learning process follows a sequence; the teaching process follows a sequence corresponding to the learning process. Speculation might be made also concerning a sequence of educative creativity. Specifically, the individual might, in the beginning stages of developing his creative potential, experience and exhibit what might be called "imitative" creativity. In imitative creativity the student experiences creative insight under his own terms, i.e., not in comparison with what a highly creative person is capable of experiencing. He imitates what others have done but at the same time discovers something for himself. The second stage might be called "innovative" creativity and might be described as new combinations of ideas or things, the newness being in terms of the individual and his immediate mental and physical environments including the other personalities within that environment. That is to say, the individual creates something which is said to be innovative in terms of his own environment. The third stage might be described as "socially useful" creativity which, in addition to being innovative, is new and <u>useful</u> to the society in which the individual exists.

The learning of physical skills (specifically movement skills and their concomitant knowledges and understandings) follows a sequence which can be developmentally defined as simple to complex. The sequence of learning a motor skill is, in that respect, similar to learning an abstraction; physical education's potentials are broad in that motor skills as well as abstract reasoning are developed through Physical Education (i.e., students must learn kinesthetically) whereas the emphasis in traditional academic subjects such as mathematics, languages,

and sciences is more on the development of abstract reasoning. In broadening one's understandings of one's total environment, it might be assumed that creative potential could fall into a sequential development pattern since that potential seems to be particularly dependent upon openmindedness, tolerance, and readiness.

The second major concept emerged as a result of the study of sequence and the subsequent multiplicity of student abilities and skill levels. That concept is that the teacher is of prime importance in the environmental structure of the teaching-learning process. Although such a concept is not new, this study served to endorse the already accepted idea for reasons in addition to those usually stated. The internal environment was assumed to be imperative to the development of the creative potential since creative enterprise is such an intensely personal phenomenon. The teacher sponsoring creativity must be openminded enough to tolerate the seemingly playful or useless responses of the students without falling victim to a laissez-faire teaching-learning environment. The teacher's attitude then fosters a similar attitude on the part of the student personnel. Traditional "good teaching" does not automatically sponsor creativity, but the "good teacher" who is sensitive to the need for a creative environment can do a great deal to sponsor the realization of the creative potential.

The third major concept emerged directly from the study of environment as affected by method. That concept is that the teaching style or method which a teacher uses is closely aligned with his teaching objectives and his personality. As Mosston pointed out, it is possible for the teacher to grow (from command to creativity) as the

student grows. Ideally, the teacher must have reached the creative level prior to instructing his students. Then he can recognize and allow for the development of creative insight when the student experiences it. The teaching style is a determinant of the quantity and quality of the creative products emitted from the students. The degree of cognitive openness with which each student comes to the class will determine the effectiveness of the style of teaching. The student's cognitive style may also determine the effectiveness of the method. Some students learn more efficiently by rote memorization, others by exploration of alternative solutions, depending upon previously established learning habits. Physical Education provides a unique opportunity for those students whose learning efficiency is highest when they are learning by doing (i.e., kinesthetically).

It is assumed that many of the skills which a student learns in Physical Education are eventually used in a game situation. The idea of the game is absent in many other disciplines within the educational system. The game provides a direct and relevant arena in which the skills which have been learned are put to use. The game is the laboratory experience for testing cognitive, affective, and psychomotor behaviors. Insights which might occur during a game situation are immediately verifiable within that situation, providing the preparatory skills have been synthesized to the point where insight can occur and verification is, at the same time, tenable.

The element of play is immediately apparent in physical education activities and is, in fact, assumed to be basic to the program. Play is an essential part of the creative phenomenon and as such can

be assumed to be enhanced through physical education programs. Its voluntary allegiance to freedom and experimentation endorses the environment deemed important to the creative process.

The game, as an aspect of play, is an enactment of human drama in which opponents match wits against wits in terms of their abilities and the extent to which those abilities have been developed. Physical Education activities reflect life in a microcosm in which there are skills, drills, goals, competition, time limits, cheating, fair play, opponents, teammates, individual and/or dual participants, uniforms, rules, boundaries, officials, rewards, deferred and immediate gratification, and role playing. Physical Education can endorse the freeing experiences encountered in programs such as Outward Bound. (97) Physical Education can be the tyrant as well, but if the program is planned with an obligation to freedom and creativity, it can be a liberating experience. In the game or the finished routine, the individual is forced to react intuitively, which is perhaps one reason why unexpected behavior patterns on the parts of the participants are sometimes seen in the physical education class.

If generalized transfer of behavior, in some degree, can be assumed, then the fact that a student with basic preparatory skills (skills which have been practiced or allowed to incubate) is called upon to act intuitively in a game in order to fill his role effectively, then we can assume that the practice he has had in acting intuitively might increase his tendency to act intuitively in other situations. To act intuitively is a part of the creative process. In Physical Education the student is expected to act "on his own" at some time, using

the skills which he has added to his repertoire. Physical Education is, in this respect, unique in relation to other disciplines in that greater latitude is not only allowed for, but expected in the student's responses to situations involving understandings, action, and feeling.

Perhaps Physical Education, through its use of various activities, through the teachers attracted to the discipline, and through the environment in which it is taught, could provide a unique setting for behavioral adaptation, for the development of the creative personality, and for the utilization of the creative process. Perhaps Physical Education lends itself naturally to the development of the whole individual through his complete total involvement in the media of movement, tactical manipulation of animate and inanimate objects, communication with others, self-appraisal, and the development of self-awareness. In short, the multiplicity of variables present in the physical education class alone seem to indicate a veritable proliferation of possibilities for the pursuit of creative enterprise.

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